THE WENCHUAN EARTHQUAKE RECOVERY:

CIVIL SOCIETY, INSTITUTIONS, AND PLANNING

By

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Dedication

To my mother Fuying Hao and my father Yongjun Lu, whose never-failing love gave me the strength to keep moving forward making this work possible;

To the people in Sichuan, whose passionate pursuit in making a difference in their lives through the darkest moments in their lives gave me the courage and faith in striving to make this work complete.

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I am also grateful to have taken Prof. Adrianna Kezar's qualitative research methods course from the School of Education at USC. She and her class probed me further into exploring the possible and the most appropriate research designs to reveal the life experiences of the people impacted by the Wenchuan earthquake. Her guidance also

brought me to rethink of my role as a researcher in the field. The final research method design of my dissertation could not have come into being without the help of Prof. Julie Cederbaum from the School of Social Work at USC. I had the opportunity to learn the research tools from her course to investigate the various designs combining quantitative and qualitative studies. What I have learned moved my dissertation research forward in such ways that could not have been imaginable otherwise. Her sense of clarity and focus every time I saw her not only gave the confidence in my own research, but also set up as a role model for me to develop as a scholar.

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The source of my inspiration for my dissertation, of course, originated from the people who took the action and empowered themselves through relentless formation of grassroots groups and organizations for the social development of China after the Wenchuan earthquake. Their collective vision and persistence in developing a vibrant Chinese civil society have also spurred me on during the times of frustration in completing this dissertation. In the moments when I was lost in direction and energy to push forward, I would remind myself of what all of this is for. It is a piece of work by the people and for the people who took the actions on the ground despite of the extreme catastrophic circumstances in their lives. This inspiration comes from discovering the potential of what people together are capable of achieving, through sustained interactions with the purpose of serving each other.

Lastly and most importantly, I could not have begun and finished this dissertation without the unfading confidence, encouragement, and support from my parents. It is them who made it all possible. This piece of work is truly dedicated to my mother, Fuying Hao and father, Yongjun Lu. My thankfulness and love for them are beyond words. Over these years, they have been there for me through every single one of my ups and downs. They shared my every moment of happiness and disappointment. It is because of their love that I am able to present this dissertation. So THANK YOU mom and dad!

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Abstract

The importance and the theoretical significance of the civil society construct in the public sphere and its involvement in the policy decision-making process have long been emphasized by scholars in policy and planning. The theory itself has yet to deal with the role of a particular set of actors in civil society through a process of social change. My research approaches this piece of the social justice issue by defining a set of foundational problems called the "theoretical paradoxes of action": 1) If the institutions of planning exist to reduce uncertainty in our lives and thus provide social order, how do they deal with unexpected change? 2) If by definition, institutions exist to provide stability and meaning to social life, to what extent can they contribute to the ability of society to learn, adapt, and reorganize to meet urban challenges? This dissertation tackles this problem set from the perspective of civil society actors through a procedural-action-oriented approach, while taking into consideration of the diversity of planning cultures across countries.

I investigated the role of civil society in developing long-term collaborative efforts for urban settlements to cope with risks and uncertainties associated with catastrophic disasters. Using emerging citizen groups and non-governmental organizations (NGOs) as the main unit of analysis, the primary intention of the study is to examine their role in

forming communication and collaboration governance networks during the post-earthquake response and recovery period. It seeks to explore the experiences of social groups and organizations' participation during the initial three-year recovery process after the 2008 May12 Wenchuan earthquake in Sichuan province, China. I adopted a case study methodology with a mixed-methods research design. The quantitative method utilizing social network analysis to look at the emergence and evolution of institutions inside the domain of civil society, their relational arrangements among each other, as well as to the state and the market domains at different points of time. The supplemental qualitative study of key participants representing group/organizational actors focused on in-depth understanding of the meaning and the driving forces of institutional change inside the civil society domain. Two types of contextual environments—communication and collaboration network structures—were being investigated along with a longitudinal study of their evolution over three time periods: before the 2008 Wenchuan earthquake, immediate emergency response and short-term recovery period, and the longer-term (up to three years) recovery stage after the earthquake.

Using UCINET network analysis software program, I focused on understanding the macro and micro structural characteristics of how social groups and organizations built their communication and collaboration networks over three distinct periods of time. Each

of the six structural environments (three communication networks and three collaboration networks) was investigated separately to look at how actors were connected and embedded within their local and global network environments. Accompanied by qualitative data collected from in-depth interviews and ethnographic field observations, the analysis demonstrated primary evidences in understanding the formation, persistence, and the sustenance of the action structures for both communication and collaboration network environments before and after the Wenchuan earthquake.

I further developed longitudinal network models in discovering the rules that governed the dynamic network behavior over the specified three periods of time. I utilized the SIENA program implemented in the R statistical system to longitudinally investigate: 1) Whether the institutional status in terms of actor registration had an effect on communication and collaboration behavior; 2) Whether there were structural tendencies that would affect the specific formation patterns of the communication and collaboration network development; 3) Whether the types of recovery activities that actors engaged in had an effect on the structural dynamics of the two types of networks; 4) Whether there were tendencies for the cross-mediation between communication and collaboration structures that facilitated the creation and maintenance of the two types of networks. With the supporting evidences from the qualitative data, the findings demonstrated the formation

of a type of proactive coping style through which newly emerged group and organizational actors took the primary role in overcoming their differences in institutional status and in re-constructing a social structural environment that nurtured the long term social capacity in dealing with extreme distress or uncertainty. Throughout the different stages of network development, the group behavior self-generated a kind of change dynamics that prompted its own evolution, thus showing signs of endurance and transformation.

At last, I proposed for a preliminary conceptual framework to understand civil society actions in times of crisis. It depicted the development of a resilient social structure as a growth process and elaborated on the role of civil society in building resilient social structures as a coping and adapting mechanism when facing extreme uncertainties and changes. The dissertation contributed to the understanding of the meaning and role of civil society in driving the processes of institutional change as a learning process for social capacity-building. My study also added to Amartya Sen's (1992) conceptual development of agency freedom by adopting a relational approach to understand the capability formation of social actors, particularly identifying the different types of risk-coping and adaptation behaviors and their links to defining a set of social-political conditions that prompted the self-emergence and evolution of network structures. This perspective emphasizes on the

empowerment issue of civil society actors, particularly when institutions are generally perceived as constraints on human behavior.

Chapter 1

Introduction

The Planning Context of the Wenchuan Earthquake Recovery

Research Background and Questions

The event under study is the recovery of Sichuan Earthquake, which struck 92km northwest of the Sichuan provincial capital, Chengdu, on May 12, 2008, with a magnitude of M8.0 on the Richter scale (UNDP). It was the most devastating natural disaster ever to occur since the founding of the People's Republic of China, both in seismic scale and in terms of impact on the Chinese people. The earthquake affected more than 100,000 square miles and about 30 million people; 69, 226 deaths were attributed to the disaster (EERI 2008). Dujiangyan, a city with national historic and economic importance, is located not too far from the Sichuan capital Chengdu (see Map 1.1 to Map 1.9 in Appendix I.). The city has an area of 1,208 square kilometers and had a population of 60,000 in 2003 (xzqh Forum, 2008). The city was one of the 39 hardest-hit disaster affected areas in Sichuan Province and was subject to the Post Earthquake

Restoration and Reconstruction Planning implemented by the central government (General Recovery Plan 2008).

My interest in the 2008 Wenchuan Earthquake recovery and the set of related research questions did not come out of a blank slate. I visited the heart-breaking sites of destructions in the city of Dujiangyan two months after the May 12 earthquake. I was struck by the level of physical damage that the earthquake had done to the city (see figs. 1.1, 1.2, 1.3, 1.4, and 1.5).

Figure 1.1. Near-collapsed Buildings in Dujiangyan
(Source: Photo taken by Jia Lu, 2008)

Figure 1.2. Destruction of a Residential Building in Dujiangyan
(Source: Photo taken by Jia Lu, 2008)

Figure 1.3. Damage of the Earthquake to a Local Hotel in Dujiangyan
(Source: Photo taken by Jia Lu, 2008)

Figure 1.4. Dujiangyan Resident Sitting Outside of a Completely Destructed Residential Site Located in the City Center Area
(*Source*: Photo taken by Jia Lu, 2008)

Figure 1.5. Earthquake Damage to a Local Historical Site in Dujiangyan
(Source: Photo taken by Jia Lu, 2008)

With a group of planning scholars from the United States who were invited to a recovery planning debriefing hosted by the city mayor of Chengdu, I first encountered the Chinese government's comprehensive plan for the entire Chengdu region and particularly the intention of incorporating citizen participation as part of the reconstruction process. The importance of "self-help initiation and enthusiasm" on the part of Chinese people as a "persistent motivation" (General Recovery Plan 2008, 5) to rebuild homes together was also emphasized consistently throughout the government mandated General Recovery Plan.

From further reviewing the state's disaster recovery plan, I became intrigued by how several of the following aspects that appeared in the original Plan were implemented on the ground and how the active role of the citizens would be revealed over time, if any. First of all, among the many basic principles that were being mandated in the Plan, was a clear welcoming gesture on the participatory "mechanism innovations" among "the state, private enterprises, social organizations, and individual citizens" (General Recovery Plan 2008, 7). This means that the state recognized and welcomed such cross-sector initiatives within the disaster recovery context. But to what extent could these efforts be brought forth through an emerging process and possibly being enabled to institutionalize would require in-depth investigation. Secondly, the "three-year recovery completion goal" (8) was clearly targeted from the state's perception in terms of what constitutes sustainable economic and social development. If this was indeed the time-frame that was sufficient for such long term development incorporating social components, how has the process been experienced or lived through by those who took an active part in disaster recovery? In other words, an investigation looking at the role of citizens and how the possible collaboration mechanisms unfolded throughout this time frame will provide a documentation of the catastrophic disaster recovery experiences of the Chinese case from the society's point of view.

Looking at the Plan through a social recovery point of view would build up the inventory for future disaster mitigation and preparedness practices not only for China but also internationally. Although the General Plan did stress the importance of capacity-building for the purpose of constructing a more comprehensive disaster mitigation system, the foundational principle was emphasized on "central coordination 统筹兼顾" (General Recovery Plan 2008, 6), thus being silent on the role of social domain as an active part of constructing recovery. If increasing capacity for conducting emergency response and recovery are indeed part of the goal for disaster mitigation and preparedness as mandated in the Plan, the question then becomes how should public policy encourage or enable "social participation" (46) throughout the various kinds of social recovery activities, such as providing "educational support, disabled and elderly, psychological counseling, etc." (46).

As I was pondering on these different aspects of the recovery Plan, what immediately came to my mind were these questions: How would the Chinese citizens participate in the process? How would the citizen initiatives be enabled? Is there anything about the Chinese society that would make this process unique? Would the earthquake change the way planning is conducted in the longer term? Two years later, in the summer of 2010, I went back to Dujiangyan and was surprised to see the ways how people could

enjoy their lives and the physical progresses they made in housing reconstruction (see figs. 1.6 and 1.7).

Figure 1.6. Post-earthquake Reconstructed Housing in Dujiangyan-01

(*Source*: Photo taken by Jia Lu, 2010)

Figure 1.7. Post-earthquake Reconstructed Housing in Dujiangyan-02
(*Source*: Photo taken by Jia Lu, 2010)

What was still left in my mind is the question how people themselves would feel and describe their experiences since the earthquake in 2008. What would the collective memories say about the Chinese society and its possible transformations? For these purposes, I find that a mixed methods inquiry combining both quantitative and qualitative research will be the most appropriate in providing answers to the questions asked.

Purpose of the Study

The purpose of this study is to first examine the role of civil society in post-earthquake recovery, mitigation, and preparedness efforts for urban settlements. Then I investigated whether these efforts were collaborative and sustainable in the long term. Specifically, I seek to explore the recovery experiences of Chinese citizens after the May12 Wenchuan earthquake in the year 2008.

The impetus for the study originated not just from the devastating impact of the earthquake in China's Sichuan Province in 2008 (EERI 2008) but also from the signs of an emerging civil society both during the immediate response (Wang 2009; Zhang 2009; Teets 2009) and in the recovery period after the earthquake. In the numerous studies that have focused on in-depth investigations of disaster response in different cultural contexts, one of the recurring themes is the relationship between civil society and the state. Aseem Inam's (2005) comparative study of recovery planning in Mexico City and Los Angeles argued that institutions within the state and civil society are both important in building 'resilience' for megacities. Emel Ganapati (2005) examined the construction of social capital in the context of a 'weak' state and its role of saving lives from the rubble after a 1999 earthquake in Turkey. In the U.S. context, Judith Steele (2006) investigated the case of Oakland fire in California in 1991. Divya Chandrasekhar (2010) examined the

participation by different 'stakeholder groups' within the state and civil society by looking at the recovery of South India from the 2004 Indian Ocean Tsunami. There were also voluminous studies that touch upon the social aspect of the recent recovery of Hurricane Katrina in New Orleans (Arnold 2006; Boettke et al. 2007; Chamlee-Wright 2007; Chamlee-Wright and Storr 2009). However, the role of civil society and its relationship with the state and market forces are less understood within the Chinese context, particularly in the aftermath of catastrophic disasters. The examination is expected to make a contribution to the understanding of planning cultures, which is the key in creating a global conversation about the role of planning in social change (Sanyal 2005). The term "planning culture" is defined as "the collective ethos and dominant attitude of professional planners in different nations toward the appropriate roles of the state, market forces, and civil society in urban, regional, and national development" (Sanyal 2005, 3). When planning cultures are in constant flux with social change (Sanyal 2005), examining the role of civil society and its relationships with the state, and market forces constitutes a crucial step in understanding how changes occur in planning practice. A "prostrate civil society" (Scott 1998, 5), within which "unmarked citizens" have no ability to contribute their own values, original ideas, and personalities to the planning enterprise, has been regarded as a "breeding ground" for authoritarian states to execute

high-modernist plans with no resistance from the ordinary people. Scott (1998) argues that disastrous events, such as war, revolution, and economic collapse can either weaken civil society or make societies receptive to new orders of arrangements. But how a "prostrate civil society" can be transformed into a "standing-up" civil society with citizens realizing their skills, intelligence, and experiences to actually act upon their opinions and desires is less well understood.

Virtually no research has addressed the 'planning culture' in relation to China's disaster recovery response. If this is a dynamic concept that evolves with social, political, and economic influences (Sanyal 2005), then two essential questions emerge: 1) Can catastrophic disasters "jump start" the emergence of a civil society? 2) Can the institutional changes being generated in the domain of civil society have longer term effects on the general planning culture? This study will attempt to answer these questions.

Significance of the Study

The potential findings of the proposed study are expected to be significant to the field of urban planning in a number of ways. First, for the theory of planning, understanding the concept of civil society in China provides a setting in which planning culture can be examined and which may ultimately contribute to the creation of a "global

conversation about the role of planning in social change" (Sanyal 2005, 24). In particular, the term "civil society" was non-existent throughout Chinese history until the beginning of the country's modernization process towards the end of the Qing Dynasty (Wu and Gong 2008; Xiao 1993). How this concept has been understood and constructed socially in China is expected to contribute to the foundation that builds up the inquiries into the theory of planning.

Secondly, the actual practices of civil society's involvement in decision-making brought about further normative debates among theorists on how planning processes should be conducted. One approach argues for a participatory decision-making process in which planners, politicians, developers, and the public forge working agreements together, thus keeping power relations in balance (Forester 2007; Healey 1997; Innes 1995). Another approach argues for the direct opposition of civil society to the state in public decision making (Friedmann 1987) while realizing the limits of either in isolation in providing social justice (Fainstein 2000). But in a situation where citizens initiated the emergence of civil society alongside with the functioning of the state, a close examination revealing such a process and the meaning of civil society in this particular cultural context renders in-depth focus of attention.

Chapter 2

Theoretical Reflection

The study is based on a critical review of the following three bodies of literatures: disaster, civil society theory, and institutional theory. The existing gaps in the planning and disaster literatures point to further investigation in the institutional theory literature. The debate related to agency freedom and institutional change demand close examination of the civil society concept. I first discuss the existing debates and gaps in the literature. Then, I will present a graph to clarify the theoretical mapping that guides the development of this research (see Figure 2.1).

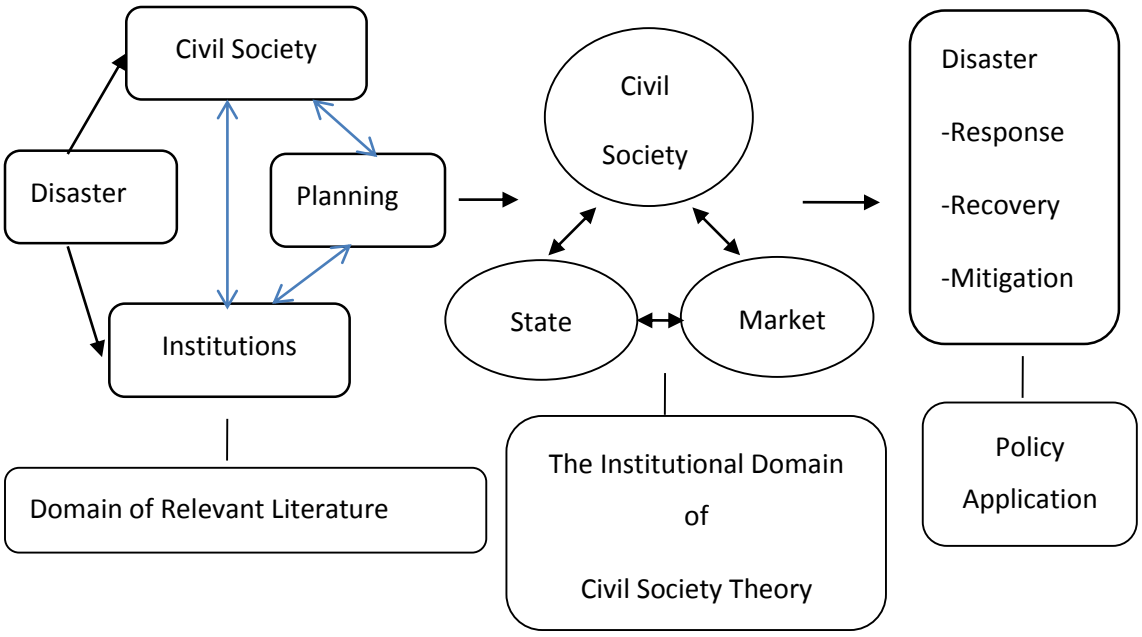


Figure 2.1. Theoretical Mapping of Literature Review

Disaster Literature

Conceptualization of Disaster and Resilience

Three main concepts in the disaster literature were essential in exploring the role of Chinese civil society in the 2008 Wenchuan earthquake recovery in Sichuan province: "disasters", "sustainability", and "resilience". None of these, however, thus far has a definitional consensus. First of all, the term "disaster" itself is a contested concept (Oliver-Smith 1998). Scholars have tried to reach an agreement over the years about its sociological meaning (Fritz 1961; Quarantelli and Dynes 1977; Dubin 1978; Kreps 1985; Barton 1989 in

Kreps 1998; Kreps 1998; Oliver-Smith 1998; Quarantelli 2001). Some examined "how social systems react to physical harm and social disruptions *after* an event has occurred" while others examined "what social systems do to increase or mitigate the risk of physical harm and social disruption *before* an event has occurred" (Kreps 1998, 33). An emerging paradigm in looking at the key dimensions of disasters is "disaster as uncertainty" has come into being in recent years (Gilbert 1998). This concept of disaster is closely related to the notion of community as the location of social action (Dynes 1998, 113). Therefore, disaster can be linked to uncertainty in three ways (Gilbert 1998): 1) when a danger threatens a community and neither the cause nor the effect of the danger can be clearly defined or identified, 2) the growing complexity of modern communities have rendered uncertainty to be mainly a product of community organization but not of external factors, 3) when there is a loss of capacity to define situations "through traditional understandings and symbolic parameters", disasters will mean a loss of "key standpoints in common sense" for a community and "difficulties of understanding reality through ordinary mental frameworks" (Gilbert 1998, 17). Paralleling such "uncertainty" and "system of meaning" approach, other researchers have focused on returning to a general sociological theory concerning the maintenance of social order in the face of uncertainty—"including uncertainties created by the destructive effects of disasters" (Stallings 1998, 132) as well as Oliver-Smith's "political ecology" approach to

disaster studies by focusing on the "relationships between people, the environment, and the sociopolitical structures that characterize the society of which the people are members (Campbell 1996 in Oliver-Smith 1998, 189). In a word, the impact of disasters on people as members of the society, their relations with one another, with the society and the state have been some of the sustained interests in disaster research. However, how individuals or communities can take up the responsibilities to cope with the risks and uncertainties associated with catastrophic disasters requires the introduction of two other crucial concepts: "sustainability" and "resilience".

While "sustainability" and "resilience" are two emerging concepts that intrigued diverse discussions among scholars in disaster research (Berke 1995; Mileti 1999; Berke 2002; Mileti and Gailus 2005; Aguirre et al. 2005; Berke et al. 2008) as well as those in the field of planning or resilience (Pickett et al. 2004; Vale and Campanella 2005; Campanella 2006; Gleeson 2008; Wallace and Wallace 2008), few have actually explicitly defined what is meant by "sustainability" and "resilience" as well as their relationships in disaster contexts. The definition of "sustainability" has owed its origins in the study of "new ecology" within social-ecological systems (Scoones 1999; Berkes et al. 2003), where it is defined as "the capacity to create, test, and maintain adaptive capacity" (Holling et al. 2002, 76). In this approach, sustainability is considered a process rather than an end product and as "a dynamic

process that requires adaptive capacity for societies to deal with change" (Berkes et al. 2003, 2). Another aspect of looking at this process is to reverse our current conceptualization in relation to stability and change: "rather than assuming stability and explaining change, as often done, one needs to assume change and explain stability (van der Leeuw 2000 in Berkes et al. 2003, 2).

"Resilience", on the other hand, is the "buffer capacity or the ability of a system to absorb perturbations" (Holling et al. 1995 in Berkes and Folk 1998, 6) such as natural disturbance (earthquakes) and human activities (resource use and pollution). It is a tool to analyze adaptive change towards sustainability because it provides a way to look at "how to maintain stability in the face of change" (Berkes et al. 2003, 15). Building resilience, is thus a process to enhance the adaptive capacity for social systems to deal with change or surprises towards sustainability, which is "inherently unpredictable" and "cannot be planned in a rational fashion" (Berkes 2003, 15).

Disaster Recovery and the Role of Civil Society

Following these conceptual clarifications, I now explore the part of disaster literature that particularly dealt with the role of civil society in developing the social adaptive capacity when facing extreme perturbations, such as earthquakes.

The "associational life" that Young (1999) and Habermas (1996) have emphasized in their discussions regarding the unit of composition of civil society has been one of the main focuses in disaster research. It is relevant in resilience-building in urban settlements after catastrophic natural disasters. Wallace and Wallace (2008) have studied urban neighborhoods as consisting of social networks and the interlocking of layers of social networks in community efficacy in building resilience. Campanella (2006) emphasized the role of citizenry as the source of city's resilience after Hurricane Katrina. According to his account of post-Katrina New Orleans, the grassroots mobilization led to "lasting political reforms" and "commitment to building affordable housing" (143), but the lack of coordinated grassroots activism also made it difficult for a city to have the capacity to rebound.

Earlier disaster scholars were also aware of the interactions among the public sector, the private sector, and "emergent citizen groups" (Stallings and Quarantelli 1985) at different "phases" of a disaster cycle, such as preparedness, emergency response,

recovery, and mitigation (Neal 1997). Until more recently, the relationships among the interactions of civil society, the state, and the market, particularly the proactive role of civil society actors during disaster recovery are being argued to be critical for areas of risk reduction and development (Arnold 2006). In his examination of World Bank disaster projects implemented in a cross-country context, Arnold (2006) concluded that the empowerment and capacity-building at the local community level are keys to "effective risk management" when taking a developmental approach to disaster recovery" (279). The right incentives need to be found not only in the U.S. domestic but also in the international context. After investigating the long term recovery and redevelopment efforts of eight catastrophic disaster events from the attacks of September 11, 2001, to Hurricane Katrina in 2005 and the Haiti Earthquake in 2010, Garnett and Moore (2010) found that both the bottom-up approach involving local people and the top-down approach incorporating a long term development vision from the state are all needed for disaster recovery. In particular, "local empowerment, organization and leadership, and planning for sustainability" (1) are integral aspects of recovery planning and risk management. While these principles of "participation", "empowerment", and "collaboration" are important in disaster recovery at the local community level for countries recovering from the 2004 Indian Ocean Tsunami (Rowland and Tan 2008), the

social-political conditions under which the actions of civil society occurred indeed varies from other countries' experiences. For the case of Turkey, disasters such as the Golcuk earthquake in 1999, the politics between the society and the state was being re-negotiated (Pelling and Dill 2010) with a "shattered" role of the state (Ganapati 2005). The role of civil society, in the form of the "emergence of civic networks" (Ganapati 2005, 289), arose out of the context of a weak state. An active role of civil society in promoting "disaster mitigation and prevention strategies" was also being noted in the recovery process from Hurricane Mitch in El Salvador in 1998 (Wisner 2001, 252). A "dogmatic" neoliberal state accompanied by a lack of capacity for local municipal governments to re-build after the disaster was found to serve as the social-political backdrop in the El Savadorian case. Some examples of the municipal government's lack of capacity included problems in "planning, programming, budgeting, management, and litigation, etc." (262). The investigation for cases in Japan's disaster recoveries showed another side of the social-political landscape. Archival research reviewing Japanese disaster recovery processes showed greater role of the state in building-up the physical infrastructures as compared to the cases investigated by Wisner (2001) and Ganapati (2005). While less attention was being paid to social infrastructure reconstruction on the government side, there was an active role of civil society in bringing residents back into the disaster-

damaged cities and thus keeping to accelerate the disaster recovery process (Aldriech 2008).

However, little has been said about how institutions in the Chinese context respond to natural disasters over the long term development planning. The relationship between the state and civil society under China's market reform has been widely contested (Hui 2004; Harvey 2005; Nonini 2008; Wu 2008) and the debate has intensified when examining the country's urbanization process (Lin and Ho 2005; Chan 2007; Lin 2007). How catastrophic disaster recovery relates to the institutional complexities of urban development in China remains unclear. Quarantelli (1999) has suggested a linkage between disaster planning and the long term regional and national developmental planning, because "every decision about residential land use, plant siting, and indeed every industrial and economic policy or program, carries with it some consequences for risk and hazard" (15). Bates and Peacock (1987) further defined the term "development" in the disaster context as "a process by which a population improves its level of adaptation to an environment and through such improvements raises the level at which it satisfies human needs and wants, and at the same time lowers its levels of vulnerability to disruptions" (Bates and Peacock 1987 in Quarantelli 1999, 15). However, the question of how developmental goals and disaster recovery can be carried out by

different institutional actors has not been substantially discussed through empirical studies that contribute to the recovery and development processes in the developing countries' context, particularly China.

Civil Society Theory

The Conceptualization of Civil Society

The review of the disaster literature calls for further attention to two other lines of theories to help understand the case of Wenchuan earthquake recovery. One is the "civil society theory", and the other is the "institutional theory".

The term "civil society", in the Western history, has been greatly contested. Distinct arguments have been put forward by theorists who made their observations "within a particular society or to explore a particular dimension at one moment in time" (Hall 2005, 3). From a concept central to the public sphere (Habermas 1989) in late seventeenth and eighteenth century Europe, to the current debate of its nature with the rise of the market economies, the concept of "civil society" has lacked a consensual definition (Edwards and Gaventa 2001; Edwards 2009). The term has always been in flux with social realities. On the one hand, one could argue that the concept essentially implies a contested nature at certain historical moments (Hall 2005). On the other hand, others

could argue for a "global civil society" with its "self-directing or non-governmental institutions and ways of life" stretching across borders (Keane 2003 in Hall 2005, 287). Whether one sides with one argument or the other, it is how civil society as an aspect of the public sphere interacts with the state and the economy that remains the crux of the theoretical contention.

This sphere within which civil society interacts with the state in a market economy is often referred to as the *public sphere*. The relationship between the public sphere and civil society has been subject to debates. Young (1999) argues that *public sphere* corresponds to the activities of political and some civic associations. These associations further belong to those within civil society whose voluntary associational life is usefully distinguished from the state and the economy. The latter two domains are systemic in the sense that people are "conditioned by system imperatives of bureaucratic routines or profit making" (144); 2). Rawls (2001), however, regard the ways of reasoning of associations is "nonpublic" (92) with respect to political society and so to citizens generally. For Habermas (1995), a *public sphere* needs to be characterized by having cumulative experience, a political character, a provision of justice to reality and the need to put forward a public use of reason, as well as a relatively homogeneous public composed of private citizens engaged in rational-critical debate.

Among the different schools of thoughts on the concept of civil society, I chose to understand civil society in such a way that "shows its development through the stages by which we have attained it" (Cohen and Arato 1992, 605) and thus include the possibilities of further theoretical adjustments to the term itself. From this historical perspective, civil society is "a sphere of social interaction between economy and state, composed above all of the intimate sphere (especially the family), the sphere of associations (especially voluntary associations), social movements, and forms of public communication" (ix). The term also refers to "the structures of socialization, association, and organized forms of communication of the life world to the extent that these are institutionalized or are in the process of being institutionalized" (x). Cohen and Arato (1992) also argued for a 'mediating' rather than antagonistic relationship among the spheres of civil society, the state, and the economy. If this "three-part" model (Cohen and Arato 1992) is at the center of the theoretical debate about civil society, then the institutional process necessary for the emergence of such a model deserves further examination.

As the evolving conceptual history of civil society has struggled with the nature of the concept and left many questions unanswered, the recent theoretical endeavors have ventured beyond the European continent and America, particularly into the vast developing worlds. Much has been debated about the existence of Chinese civil society

among Western scholars (Strand 1990; Metzger 2001 in Kaviraj and Khilnani 2001; Howell and Pearce 2001, Heberer and Sausmikat 2005) and Chinese scholars (Li 2004; Zhang 2005; Tao 2009; Yuan 2009; Zhang 2009). The center of the contention revolves around the relationship between the state and civil society in an emerging market economy with the concept of civil society defined in a variety of ways. Since the Sichuan Earthquake in May 2008, the massive number of self-motivated volunteer efforts by Chinese citizens and the establishment of related disaster-relief non-governmental organizations (NGOs) have led some scholars in China (Chang and Fu 2009; Xiao et al. 2009) to believe we are witnessing the "birth" of Chinese civil society after the catastrophic disaster. Two to three months after the earthquake, Teets (2009) tried to verify these claims by studying the participation of "civil society groups" participation in short-term relief efforts. However, in looking at the emergence of civil society in the Chinese context, nothing has been written to examine the process of interaction among the institutions of the state, civil society, and market economy over the long-term recovery period. I expect that my study will contribute to the understanding of this process.

Three Domains of Planning Theory: Civil Society, the State, and the Market

The planning literature, especially theories in planning, has undergone dramatic paradigm shifts. It started from the "top-down" rational planning approach with planners using their scientific and technical knowledge to manage spatial change. "The rational man", particularly among economists, relies heavily on classical economic theory to justify the role of state in managing the economy "in the public interest". Incrementalism (Dahl and Lindblom 1953) and advocacy planning (Davidoff 1962) responded to the shortcomings of rationality-based models by acknowledging the various group interests in the state's decision-making process. This is followed by the approach of "communicative action" (Innes 1995; Healey 1999) in which planners become facilitators in the negotiation process among politicians, developers, and the public. The "bottom-up" paradigm, however, emphasizes the direct collective action "from below" and the mobilization against ruling elites situated in the domains of the state and market (Friedmann 1987). Some recent literature suggests that the state, market forces, and civil society are all important in achieving social justice (Fainstein 2000). Little has been done to investigate the actual meaning of civil society and the institutional processes of interactions among the domains of the state, civil society, and market forces.

For theories of planning, there are three domains throughout the history of modernity and arguably, within the conditions of "post-modernity" (Berman 1998; Giddens 1998): the state, the market, and the civil society. Each of these components has been argued to have its own linkages to the planning tradition. For its connection to the market, proponents of the neo-classical economics have argued for the superiority of market mechanisms such as privatization, deregulation, and price-based approaches to planning interventions. The role of planners, according to this tradition, is supposed to be strengthening or even creating markets. Consequently, the contribution of the civil society to planning has largely been ignored. The connection between the state and planning can be traced to traditions such as "social reform" and "policy analysis". The primary emphasis in this model is to focus on how planning can serve the state and thus making actions by the state more effective. The appropriate role or engagement of the civil society in planning has been regarded with minimal tolerance since the general public is often assumed not possessing the adequate scientific knowledge to inform the decision making process. The direct connection between the civil society and planning can be related to tradition of social movement as well as what was later referred to as "radical planning" (Friedmann 1987, 389). Civil society, when "organized for a life in common" (344), will formulate part of the "political community" which directly

challenges the existing power structure domination. Planning, within such tradition, must be grounded in assisting the civil society to stand against the repressive state and planners must be able to stand up against the hegemonic power and "put their work in the service of emancipatory values and a strong political community" (315).

Although the three lines of inquiry are important in the history of planning thoughts, one critical under-developed area in relation to these traditions in planning theory is the extent of the institutional context and structure within which the planning processes are being or can be transformed through the interactions among actors of the state, the market, and the civil society. On the one hand, the dialectic forces of our human experience of modernity have re-bonded the interactions among the market, the state, and the civil society. On the other hand, with the on-going process of globalization, where uncertainties, contingencies, and fluidity prevail with dissolution of distinctions and differences, the three components are put in a relationship of permeating spheres where they become increasingly fused with each other. The field of planning, then, resides in a *public sphere* of the modern society. According to Habermas (1995), this sphere needs a political character of communication based on critical debates, a provision of justice to reality, and putting forward a public use of reason. Such public sphere within which planning operates can thus be expanded to an overall context of social justice. If this is so,

a subsequent set of questions that are left unanswered within the theoretical terrain are: What is the role of planning in constructing such a public sphere? What are the institutions and the institutional arrangements that could sustain the role of civil society in planning and its interactions with actors in the state and the market domains?

Apart from the aspects of substantive planning theory, the procedural aspect of planning is another integral part of reaching an outcome of social justice. Tracking back to the theoretical assessment of justice in Sen's (1992, 1999) capability approach and John Rawls' (2001) "Justice as Fairness", there has been a consistent gap between what earlier scholars have envisioned for and the institutional processes to achieve them. For Sen (1999), both the capability approach and the need of plurality of institutions for promoting people's overall freedom are inextricably linked. For Rawls, the argument focused on the importance of the basic institutional structure of the society and its role in serving as the "primary subject of political and social justice" (10). However, what has been left unanswered in this line of inquiry is the operational side of the picture: How to achieve a "plurality of institutions" so that people's opportunities for functioning and freedom can be maximized? And how to build a basic institutional structure to provide opportunities for citizens to achieve the kind of life they value, which include their "aims, aspirations, and character" (Rawls, 2001, 10)? Such are the themes dealing with the

procedural aspect of planning institutions. An important concept to consider with respect to processes is "human agency" (Giddens 1984) and its connections to "institutionalization" (Jepperson 1991 in Powell and Dimaggio 1991) and "institutional change" (Powell and Dimaggio 1991; Scott 2008), given the concept of institutions and the importance of it properly understood. However, if the role of institutions is played out by reducing uncertainty, making our expectations more reliable (Verma 2007), and providing stability and meaning to social life (Scott 2008), the question to consider then, is how planning can be founded in Sen's political conception of justice with the provision of human capabilities representing the freedom enjoyed by each person "to choose the lives that they have reason to value" (1992 p81)? The possible convergence of the institutional dimension and the capability approach of planning remains to be investigated and such endeavor may lead to an important contribution to an institutional perspective of planning theory.

Institutional Theory

The Conceptualization of Institutions

The institutional dimension of civil society theory thus offers other threads to look further into institutional theory for some necessary conceptual clarifications.

There are three widely used approaches to understanding the concept of institutions. One approach underscores the institutional constraints and the regularization of behavior (Scott 2008), and prominence is given to explicit regulatory processes—"rule-setting, monitoring, and sanctioning activities". Social order is believed to be based on rules. New institutional economics scholars such as transaction cost theorists (Coase 1937, 1960; Williamson 1988), economic historians (North 1990), as well as political scientists in the rational choice/game-theoretic tradition (Ostrom 1990, 2005) have all emphasized this regulative pillar of institutions. Another approach gives prominence to "binding expectations" as the basis of social order. Organizational theorists such as March and Olsen (1989) embraced such normative roles of institutions in which the basis of compliance is "social obligation" compared to "expedience" in the regulative pillar. Both the regulative and the normative approaches contend that institutions can impose constraints on social behavior as well as empower and enable social actors (Scott 2008). Little has been said about the extent to which individuals and groups can be enabled by regulatory and normative pillars of institutions, have the capabilities to choose to exercise their "agency freedom" (Sen 1992), thus taking action to perform responsibilities, duties, and accepting mandates.

The third approach argues for a cognitive and cultural explanation of institutions (DiMaggio and Powell, 1991). The cultural-cognitive explanation emphasizes the "internal" interpretive processes that are shaped by "external" cultural frameworks over an extensive period of time. Institutions are created as a social process through repetitive actions (Berger and Luckmann 1967) and as an entrenchment of an "intellectual process" through people's minds (Douglass 1986). However, what is left to be understood is how institutional change can occur if the cognitive roots of institutions are formulated through long period of sedimentation and historical tradition.

Institutional Structuration and Transformation

If *institutions* can be understood as "a conventional to standardized interaction sequences" that has "attained certain state or property" (Jepperson 1991, 145), then, *institutionalization* represents a "process of such attainment" (145). In the institutional theory literature, the paradox of action and structure (Giddens 1984) has commonly been understood as a state within which institutions "simultaneously empowers and control" (Jepperson 1991, 146) as representing a "constraint and freedom duality" (Fararo and Skcoretz 1986 in Jepperson 1991, 146). Then, a key question is how to articulate the institutionalization process amidst such an action/structure co-production dynamic.

Current discussion in institutional theory has yet to develop an explicit set of metrics that can represent the various "degrees of institutionalization" (150) in different topical domains of the society. One example would be social resiliency in response to crisis and catastrophic disasters, particularly the structural institutionalization among civil society actors in various cultural contexts. This inevitably brings about the concept of *institutional change,* which can exhibit four stages of characteristics: *institutional formation, institutional development, deinstitutionalization, and reinstitutionalization* (Jepperson 1991). In the context of this study, I focus on the first two processes: a) institutional formation denoted as "reproductive patterns based upon 'action'"; b) institutional development as a process of maintaining and elaborating the formation momentum (152).

Essentially, there are two levels of unit of analysis when considering institutional change. One focuses on the generation of institutional forms such as groups and organizations themselves. The other one focuses on the "institutional environment" (Scott 1991, 165) within which groups and organizations function and conduct their activities. Along the latter line of research, Powell (1991) also argued that in order to explain the different stages of change, the structural sources of various types of institutional

environments requires further investigation. He particularly pointed out the relevancy of such processes being exemplified in the crisis context:

> Actions taken to respond to challenges and crises often lead to the establishment of new institutional powers and precedents. Yet at this point we know relatively little about organizational fields change their structure and content (Powell 1991, 201).

Missing Links: Institutions and Social Change

In summary of the previous literature review, if the definition of institutions is to be:

> Institutions are comprised of regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life (Scott 2008, 48).

One issue that cut across both institutional and planning theory is how planning institutions deal with uncertainties and risks in general. The challenge is that it questions the underlying assumption of the institutional analysis that institutions are important. How important are they in dealing with social change in diverse cultural contexts? And under what conditions are they to be associated with social justice?

Planning and policy-making are embedded within institutions, be it rules, norms, or cultural practices, which have inevitably become part of our daily lives. When the goal for planning is to make social change toward social justice ends, such as within the growing concerns of sustainability and resilience-building, particularly at the level of

groups, organizations, and communities, the origin of institutions and their formation process must become an integral part of the intellectual endeavor in order to look at the source of the making that change.

Along with scholars in social justice who addressed the possible constructs of civil society in the public sphere, the importance of involvement of civil society in the decision-making process has been argued through different approaches in the planning literature (Forester 2007; Healey 1997; Innes 1995; Friedmann 1987; Fainstein 2000). On the one hand, these studies have generally taken a theoretical approach from which ideas and arguments have been conceptualized and debated in a descriptive nature. On the other hand, the theory itself has yet to deal with the role of a particular set of actors in civil society through a process of social change, particularly in cultures where a "prostrate civil society" (Scott 1998, 5), within which "unmarked citizens" (Scott 1998, 5) have no ability to contribute their own values, original ideas, and personalities to the planning enterprise.

A Capability Approach to Institutional Change in Civil Society Domain

My research approached this piece of social justice issue by defining a set of problems of what I call the "theoretical paradoxes of action". And they were exemplified

by institutional theory and the theory of civil society in the following ways. 1) If by definition, institutions exist to provide stability and meaning to social life, to what extent can they contribute to the ability of society to learn, adapt, and reorganize to meet urban challenges? If the institutions of planning exist to reduce uncertainty in our lives and thus provide social order, how do they deal with unexpected change? 2) If civil society is indeed important in the planning and policy decision-making process, to what is its role in the process of social change, in different cultural contexts?

I attempted to approach this problem set through a procedural-action-oriented approach emphasizing on the perspective of civil society actors. The theoretical aspect of such a stance originated from Sen's (1992) definition of "agency freedom" and his "capability" approach to social justice. The concept of "agency freedom" was distinguished from the "well-being freedom" as the former reveals a person's "freedom to bring about the achievements one values and which one attempts to produce, while the latter is one's freedom to achieve those things that are constitutive of one's well-being" (57). The primary focus of agency freedom relies on the person's own initiative in taking agency actions in bringing about the achievements. And such freedom is further reflected by the person's capability in bringing forth the different kinds of lives that he or she has a reason to value. Following Sen's arguments on the importance of agency freedom, the

purpose of my study is to discover the source and extent of such freedom. And it is conducted through examining the origin and development of the capability set that actors inside the civil society domain can be enabled with their own agency actions in times of change and crisis.

The uniqueness of this approach is that it allows for explicit observations of the interactions of civil society actors over time. It also offers new insights from understanding their experiences and developing possible scenarios and dynamic models that specify the rules governing processes of the source of social change. The findings in this respect will be making a contribution to understand the process that agency freedom can be developed when institutions are generally understood as constraints on human behavior.

Social Network Theory

In order to implement the "procedural-action-oriented approach" emphasizing on the civil society group/organizational actors in this research, I chose to utilize the social network theory as a lens through which I investigate the role of civil society in the Chinese disaster recovery context. This approach can be further breaking down into both theoretical and methodological perspectives. In the following paragraphs, I will briefly

introduce the background literatures in social networks illustrating the uniqueness of such a research approach in this study context, and leave the empirical application part of the discussion to the later methodological section.

According to Borgatti (2009), theories of social networks can be developed through different levels of perspectives and each one has its significance in linking the theories discussed in the previous sections. First of all, the most basic level of approach is looking at the "*types of ties*" (893), which in this research context would be the theoretical backdrop of my structural analysis. Table 2.1 illustrates some of the examples that are relevant to the context of this research study based on Borgatti's original categorizations. As we can see, the study of the Wenchuan earthquake recovery can be further broken down into sub-areas. The investigation of patterns in institutional formation and development, or measures of institutionalization (Zucker 1991), inside the civil society domain can thus be specified with different combinations of characteristics in each category. For example, one can look at the communication interactions among those non-registered informal civil society actors who emerged in Sichuan both during the response period and the recovery period. This way, indicators of the degree of institutionalization for the focused structural environment can be generated.

Table 2.1. Use of Social Network Theory in Studying the Wenchuan Earthquake Recovery

Similarities			Social Relations	Flows	Interaction Contexts	Interactions
Location	Attribute	Activities	-Communication -Collaboration	- Information -Resources -Emotions -Beliefs	-Before Disaster -Response -Recovery -Mitigation -Preparedness	(Within Sector) -Civil Society (Cross Sector) -Civil Society -State -Market
Geographical proximity	-Registration Status, - Establishment Date	-Women, -Children, -Environment -etc.				

Source: Borgatti 2009; Adapted by Lu 2013

The second level of network theory development can be discovered at the structure level. By "structure", this research specifically refers to the institutional environment that civil society actors enacted to shape and at the same time may be constrained it. The graphical shapes of the different types of structures, either at the whole network level or at the sub-structure level, reveal various levels of cohesiveness or disintegrated-ness of the institutional structures. Properties of dyadic, triadic, and sub-group properties illustrated through graph theory provide the key for examining how actors chose to situate themselves across different time stages of the disaster recovery process. When the focus is on each actor inside the structure, centrality measures can be compared and the different characteristics of a set of actors can be identified based on the context of disaster recovery. For example, in the communication network for each time

stage, a set of actors can be identified as more "powerful" because many others reached out to them to seek earthquake related information or others must pass through them to reach to the rest of the actors.

The third level in developing network theory regards finding out the factors that can explain "the formation of network ties and, more generally, to predict a host of network properties, such as the clusteredness of networks or the distribution of node centrality…" (Borgatti 2009, 894). Besides this focus on formation, some recent methodological development (Snijders et al. 2010, 2012) in network analysis also allowed theories to look into the rules governing the institutional change process thus exemplifying their prediction power in forward-looking models. And these models can be looked at from two perspectives. One set of research questions can be developed by seeing network structures as dependent variable. In the context of this study for example, one can ask: what is the basis of communication or collaboration ties over time? What are the endogenous structural and the exogenous attribute factors can help explain the development of these structures? In other words, the premise is that actions and behaviors shape the structure. The other side of the picture is looking at network structures as independent variables and examining if they can predict certain outcomes related to homogeneity and performance (Borgatti 2009). For example, one can ask whether the

development of the communication or the collaboration network predicts the joint participation of response and recovery related activities such as building up livelihood for local communities, environmental protection, taking care of disadvantaged populations, and providing psychological counseling services, etc.

The divergent "mechanisms" (Borgatti 2009, 894) that can explain networks as outcomes or the consequences of network variables may then be identified as another level of network theory-building. One specific concern for network theory is related to how the findings can used to inform the actors with the hope of "influencing the way people see themselves and how they act" (895). In this research, the degree to which the structural and the dynamic theoretical formulations that can be utilized by policy makers and the civil society actors themselves to enhance the capacity of the coordinated disaster response, recovery, mitigation, and preparedness remains to be seen. This would require cross-cultural examinations to develop network theories in particular relevancy to disaster recovery planning and risk management.

Chapter 3

Methodology

Philosophical Assumptions

One's worldviews plays an important role in the formulation of research questions, researcher's role in the study, as well as the actual practice of research (Creswell 2007; Padgett 2008). Therefore, I feel it is crucial for me to explain my philosophical assumptions that influence the way I conduct my research. Social constructivism is one of these assumptions. In this worldview, individuals seek to understand the world in which they live and work. The meanings toward certain objects or things are varied and multiple, leading the researcher to look for complexity of views rather than narrow the meanings down into a few categories and ideas (Creswell 2007). I see the ways that meanings being developed are negotiated socially and historically. Therefore, I allow myself to ask open-ended questions and to listen carefully about what people say about their lives and work. Interactions with others play a decisive role in constructing meaning of a situation.

Participatory is another one of my worldviews. Growing up in China, I have seen some of the poorest rural areas where people still lived without electricity and have not seen any kind of modern automobile. As in the developed countries today, even with

China's more recent experiences of modernization that has brought luxurious ways of living for some, the problems related to the quality and standard of living of the vast majority remains. As a researcher, I not only want to study the issues at hand but also would like my research to benefit the participants in a way that may change their lives. Especially for the marginalized or simply those whose point of views have often been ignored by the dominant structures, I hope to provide a voice for the participants, raising their consciousness and improving their lives as the issues are studied and exposed.

Research Statement

The overarching central research question of this study is: *What is the role of civil society in developing long-term collaborative efforts at the level of local citizens to cope with risks and uncertainties associated with catastrophic disasters?*

I structure the examination of this question through three sub-components so that the major concerns and complexities in the central question can be addressed and resolved.

Component 1(Drivers of Agency Action and Institutional Change)

Can catastrophic disasters bring about actions for institutional change in Chinese civil society? If so, how do actions and interactions inside the civil society domain emerge in the Chinese disaster recovery context? What are the motivational factors driving the emergence and development processes? How do the sources of the processes contribute to the understanding of meaning of Chinese civil society?

By the term "institutional change", I refer to two types of processes. One is the "internal generation of institutionalized forms" (Zucker 1991, 165) within groups and organizations. In other words, it is the study of actions that triggered the formation and development of the informal social groups as well as formal NGOs that established field offices in Sichuan Province during the disaster response and the recovery periods. The other type of institutional change I examined was the emergence and evolution of the institutional environments represented by the structure of interactions among actors within civil society and across the civil society, the state, and the market sectors.

Component 2 (Communication and Collaboration: Structural Dynamics of Civil Society in Action)

Do institutions within the domains of civil society, the state, and market system "collaborate" in shaping recovery responses after catastrophic disasters? What are the structural dynamics within the civil society domain and across civil society, the state, and the market?

The structural changes within the domain of civil society were examined through the development of social groups and NGOs that either emerged or established field offices after the Sichuan earthquake. I then looked at the interactions among the institutions of civil society, the state and the market system.

Rather than using the term "market", I choose "market system" in my research inquiry by defining it as "a system of society-wide coordination of human activities not by central command but by mutual interactions in the form of transactions" (Lindblom 2001, 4). The use of terms such as "market" and "economy" does not differentiate themselves from the activities of the state and civil society because they all make use of and basically focus on the interchanges of certain goods and services. The "market system", however, emphasizes the activity of "social coordination by mutual adjustment" (Lindblom 2001, 23) and encompasses society as a whole rather than an area of behavior

often referred by "market" or "economy". This way, the market system serves as an alternative schema, besides civil society and the state, to think and understand a society (Lindblom 2001). Different types of coordination may be adopted in each domain and may vary from one country to another. The scope of all three domains in this study—civil society, state, and market system—is consistently society-wide.

Another critical component here is the idea of "collaboration". While collaborative public management scholars have argued for greater role of public and citizens in participatory governance (Bingham et al. 2008), the conceptualization of the term "collaboration" depicting the "antecedents, processes, and outcomes" (8) of actions within and across sectors has yet been made clear and requires further research endeavor.

Component 3: (Resilience: Rules Governing Emergence and Evolution)

Are there rules governing the structural dynamics within civil society domain and across civil society, the state, and the market? Do their interactions shape the institutional change in civil society? How?

As the within and cross-sector interactions emerge and develop over time, it became critical to examine the network structural characteristics and the actor attributes that can help explain the persistence of institutional environment outcomes. The process from

institutional formation to institutional development can be accounted by the sub-structure formation inside communication and collaboration networks. These different types of sub-structures that contributed to the process can be further captured by longitudinal social network models. It is therefore possible to depict the social rules and regularities guiding the structural changes both within the civil society and across sector boundaries. The evolution of these networks will use three points of references: before the 2008 Wenchuan earthquake, short-term response period, long term recovery period. The persistence of both the internal institutionalized social structures inside the civil society domain was a key source of social resilience after the catastrophic earthquake in the Chinese case.

In summary, figure 3.1 below illustrates a map in developing the different levels of analysis in relation to each component inside the research statement.

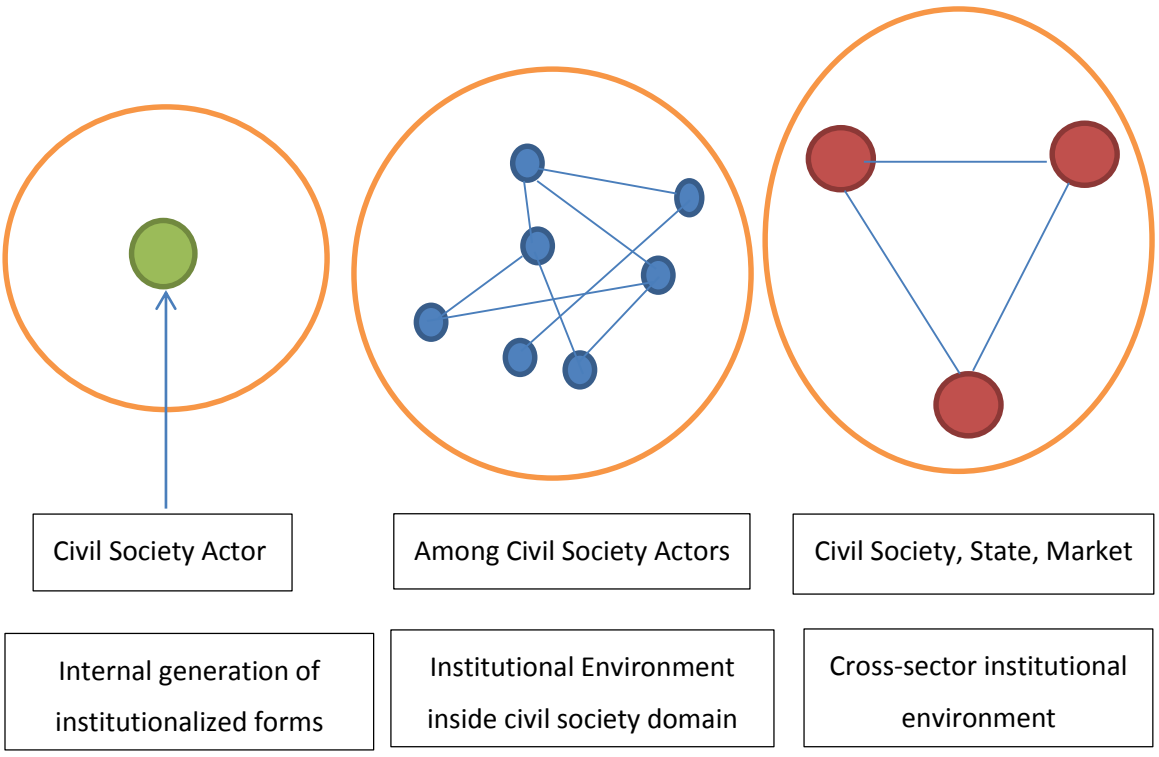


Figure 3.1. Levels of Institutional Analysis

Methodology

Research Methods

Figure 3.2 below shows a general map of the lay-out of my research plan. The proposed research adopts a case study methodology for an in-depth description and analysis of the role of Chinese civil society in the 2008 Sichuan Earthquake recovery process. The role of civil society is examined through resolving three sub-components in relation to the central research question: 1) Structural dynamics of civil society in Action,

2) Rules governing civil society emergence and evolution, 3) Sources and motivations of agency action and institutional change. Each of these components also contributes to one another in answering the overall research question. My case study research will use both quantitative and qualitative approaches in which the investigator explores a bounded system (a case) over time, through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, documents and reports) (Creswell 2007, 73). Barney Glaser and Anselm Strauss (1967) emphasize the importance of a qualitative method in order to achieve the ends of concept specification for theory-generating purposes, particularly when data from one nation involve "structural conditions, consequences, deviances, norms, processes, patterns, and systems" (18). I strive to understand the actual recovery experiences of people and how their lives had changed since the catastrophic disaster. A qualitative component within the case study approach was designed to understand these issues in which processes and connections are imperative but are incompletely comprehended (Peattie 1983).

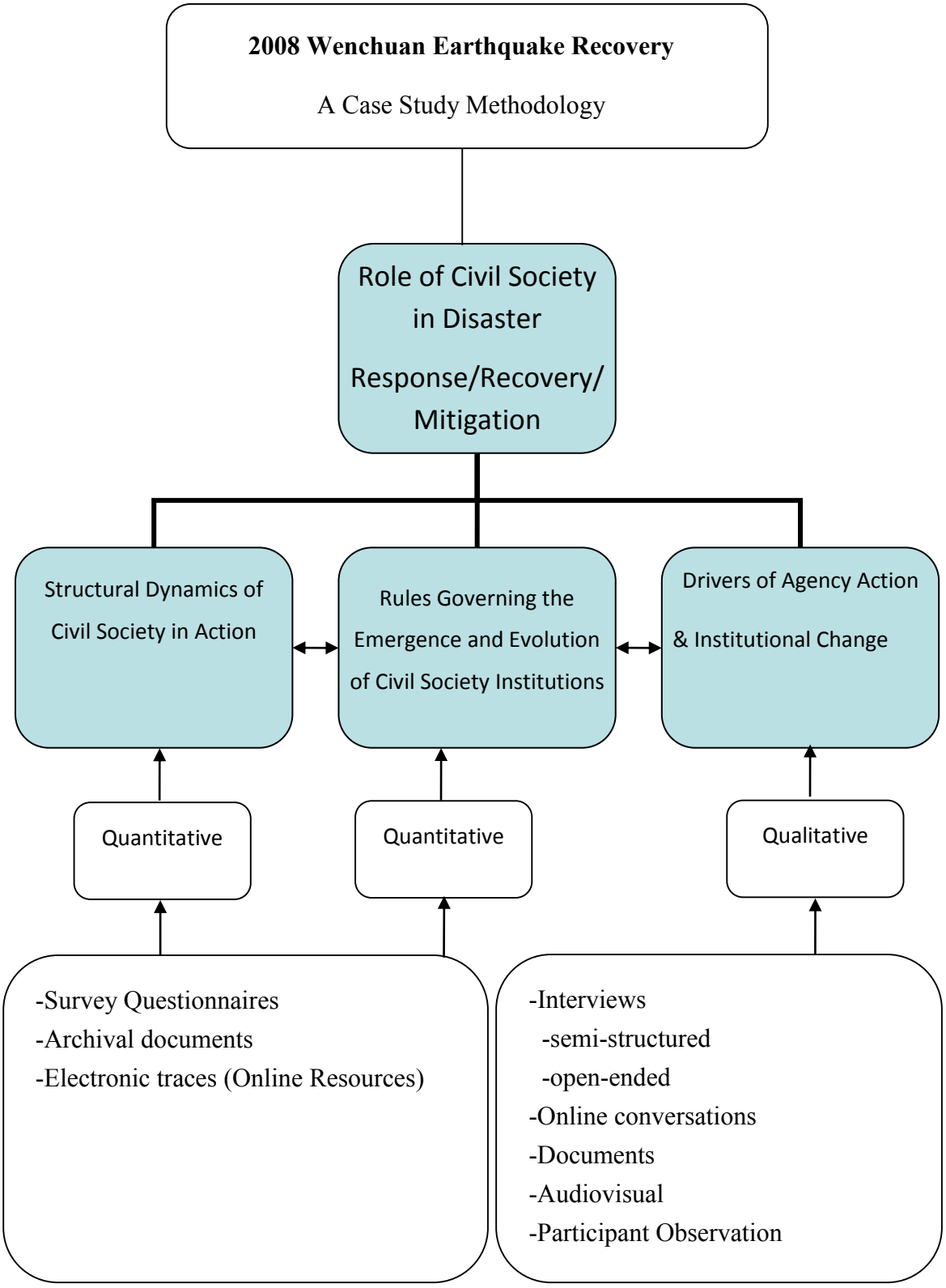


Figure 3.2. Research Design

Rationale for Mixed Methods Research

The proposed study will be using a mixed methods research design (Creswell and Clark 2007) with quantitative and qualitative data each answering a different set of research questions. One reason for combining qualitative and quantitative data in this study is that they together provide a more complete picture of the earthquake recovery process rather than adopting either approach alone. The qualitative data focuses on understanding the meaning of the civil society concept in the Chinese context and seeks to identify the motivational origins that ignited actions and processes of institutional change in civil society. The quantitative data provides a structural outlook of the actions and interactions taken inside the domain of civil society and the factors contributing to the structural evolutionary processes over time. The different research components that are answered by the two types of data complement one another in making contributions to answering the central research question.

Secondly, this research uses an embedded design (see figure 3.3) (Creswell and Clark 2007) within which the qualitative data play a supportive role in adding to the understanding of the mechanisms found in the quantitative data set. The quantitative method is designed to look at the evolutionary stages of how actions inside civil society took place. The qualitative study builds upon and further expands on the social network

analysis of the quantitative data by helping to understanding the underlying process that builds the foundation for relations to emerge.

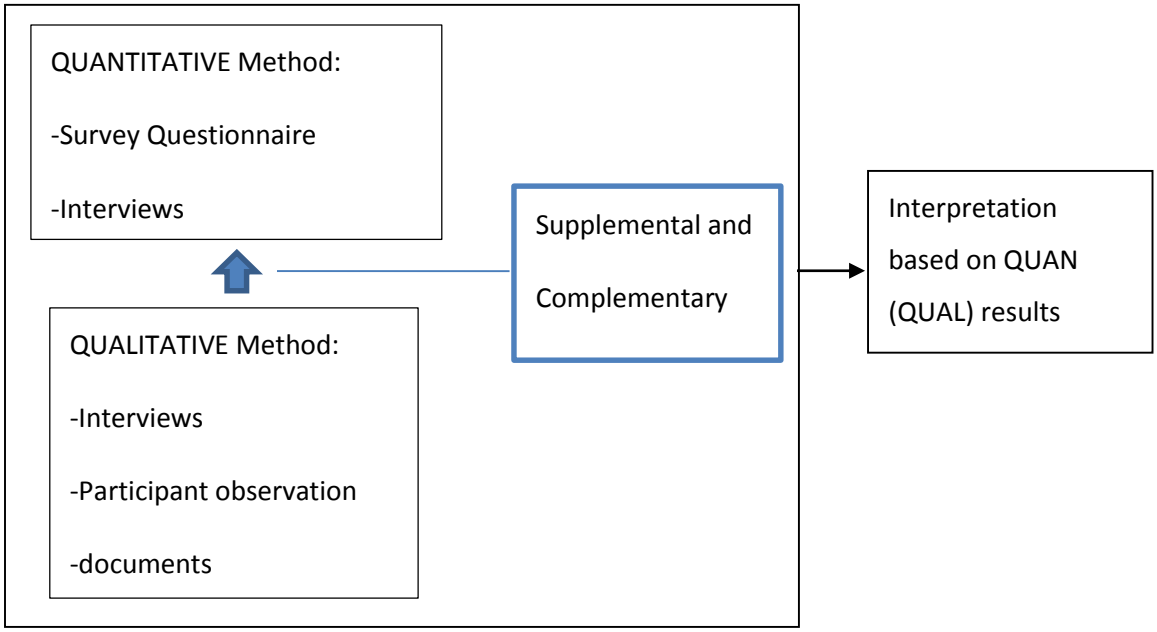


Figure 3.3. Mixed Methods Design
Source: (Creswell and Clark, 2007) adapted by Lu, 2013

Nature of the Data

Assumptions

By saying 'quantitative data' in my research, I am referring to the type of data that can depict the *structural relations* between a pair of actors. On the one hand, patterns of relations came into being as a result of actions taken by "agents", which can take the form of individuals, groups, organizations, communities, or nation-states, etc. These

agents can also be called "*actors*" as they take the initiative to reach out to others to form a relationship with other agents or actors. On the other hand, the regularities of relations or the "overall structures" in turn influence the perceptions, beliefs, decisions, actions, and behaviors (Knoke and Young 2008) of the actors themselves. This kind of data as contacts, connections, and ties is primarily referred to as *relational data* and the methods that are being commonly used to examine it is called *network analysis* (Scott 2000). In essence, relations are not qualities or traits of the agents themselves but rather, they are properties of the "system of agents" (Scott 2000, 3). From this lens of looking at data, the identity or role of one actor does not solely depend on a set of self-claimed characteristics, but most importantly, on how it relates to others in a larger system of actors.

The standard quantitative data in most planning research is in the nature of *attribute data*, which reveals the properties, qualities, and characteristics of individuals or groups. The corresponding method in examining this type of data is *variable analysis* (Scott 2001). The current state of art in the field has yet to utilize the relational data as well as the appropriate analyzing methods to bring about their capacities in understanding processes of social change. In this research study, I investigate a central phenomenon of the actions and interactions among grassroots civil society groups/organizations after the

Wenchuan earthquake. There are three key assumptions in the analysis of relational data (Knoke and Young 2008). I will briefly illustrate them in the following paragraphs.

First of all, "structural relations are often more important for understanding observed behaviors than are such attributes as age, gender, values, and ideology" (Knoke and Young 2008, 4). This assumption has to do with the question related to action and how it can be revealed explicitly to illustrate a possible set of regularities and patterns. The action perspective is the lens chosen here to examine the role of civil society groups and organizations in the Wenchuan earthquake disaster recovery. Although actors defined as group/organizations or understood as "collective social actors" (Knoke and Young 2008, 7) might vary in size, registration status, or working locations, or other attribute-related traits, many become "leaders" in providing assistance towards other actors. Others became key intermediaries in passing information along during the periods of emergency response and disaster recovery. When the group/organizational actors' attributes remain constant over time, how actors relate to one another provide critical insights in explaining the emergence and development of behavioral patterns. In other words, a structural-relational lens brings about a different aspect of theoretical and empirical explanations on how phenomenon in various social contexts would occur and the possible sources of social actions.

The second assumption in focusing on the patterns of relational data and their effects are "social networks affect perceptions, beliefs, and actions through a variety of structural mechanisms that are socially constructed by relations among entities" (Knoke and Young 2008, 5). In other words, the structural relations that are being actively constructed will in turn not only affect the behavior of actors but also their perception of the social reality within which they are embedded. The formation of informational and collaborative structural relationships among civil society actors in this research for example, may also enhance a sense of perceived belonging and thus sustaining cohesion inside the civil society domain over time. The key emphasis here is on the transient nature of social structures. When working with relational data, the social structure itself became a dynamic one as it is being constantly constructed and reconstructed by the observed behavior of social actors. In turn, the actors' decision-making process, their perceptions or beliefs are also being shaped by the way they are being situated inside the structural relationships.

The third assumption is that "the structural relations should be viewed as dynamic processes" (Knoke and Young 2008, 6). The premise here is that relational structures not only can impose constraints on actor's behavior but also can bring about actions through socially constructed perceptions and cultural understandings. In the context of this

research, the role of civil society in emergency response and disaster recovery after the earthquake event is in itself a dynamic process. Relation structures among civil society actors not only emerge but also go through systemic transformations as a result of "combined preferences and purposeful actions" (6) of actors. Examining such structural changes longitudinally can, on the one hand, provide an alternative conceptual tool to link micro-level actor behavior after the disaster event to macro-level structural transformations in the civil society domain. On the other hand, it is also a methodological tool in the planning field to design measures in evaluating the progresses of social recovery after catastrophic disasters.

Actors, Relations, Networks

Two of the fundamental network concepts when investigating relational data are *actors* and *relations*. They are the two key components when studying social structure, as it "consists of regularities in the patterns of relations among concrete entities" (White et al. 1976, 733-734 in Knoke and Young 2008). The "concrete entities", or actors, can be represented by individuals, informal groups, and formal organizations, or nation-states, etc. In this research, the actors that I am focusing on reflect the associational nature of the "civil society" concept, and they are voluntary informal social groups and formal Non-

governmental Organizations (NGOs) that participated in the emergency response and recovery stages after the Wenchuan earthquake in 2008. I call them "civil society actors" throughout the remainder of this study. Considering the different components of my research question, I also included two other types of actors in this study. One is the state actor representing the aggregate of all of the government branches. The other one is the market actor representing the aggregate of all the private enterprises or businesses functioning in the market system. This mixed design of network actors will ensure that the cross-sector dynamics as part of the structural mechanism that build up the role of civil society be explored and illustrated explicitly in a disaster recovery setting.

The concept of *Relations*, on the other hand, are the *connections* and *ties* built between a pair of actors. Relations can also have *directions.* A tie can be *directed* when one actor is the initiator of a relationship and the other is the recipient. A tie can also be *non-directed* "when mutuality occurs" such as one in conversations (Knoke and Young 2008). In this research context, I focus on directed relations because during the times after the disaster event, civil society actors from across the country came to Sichuan Province to participate in the emergency response and recovery efforts. Many of them did not know the existence of others beforehand and some of the actors only established themselves as entities, either formal or informal, after the disaster event. In these

incidences, the overture by one group/organizational actor towards the other will be a significant piece of information regarding the actor's decision-making process and its patterns of behavior.

A social network is defined as "a structure composed of a set of actors, some of whose members are connected by a set of one or more relations" (Knoke and Young 2008, 8). Actors and relations are the two fundamental components of any network structure. This research examines two types of network relations. One is how actors communicate and exchange information with each other. The other is project collaboration. Empirically, this study intends to represent, in a descriptive manner, the micro and macro-structures of both communication and collaboration networks for periods before and after the earthquake. Theoretically, I first aim to explore the sources of emergence of these two types of networks by tracing the cognitive and motivational origins of relations or ties. Then, I examine the rules governing the evolution of the two types of networks as they develop over time, thus providing explanations of actor behaviors transitioning from before the earthquake to the emergency response period, and further into the long term recovery period.

Data Collection Procedures

Network Data Collection

Sampling Strategy and Description of Setting

Approaches to Network Boundary Specification

Several design elements in the network analysis require clarification in the discussion about the collection of network data. The first element involves the decision on *sampling units* (Knoke and Young 2008), which comprises setting of the network boundary and the inclusion of actors.

At the theoretical level of social action, there are two types of boundary specification strategies regarding the task of collecting relational data. One is the *realist strategy* in setting network boundary "by definition assumes the proposition that a social entity exists as a collectively shared subjective awareness of all, or at least most, of the actors who are members" (Burt and Minor 1983). The second approach is called the *nominalist strategy*, as it is a way of drawing the network boundaries based on a nominalist perspective on social reality (Burt and Minor 1983). This strategy is further defined as:

> …an analyst self-consciously imposes a conceptual framework constructed to serve his own analytic purposes. Delineation of network boundaries is analytically relative to the purposes of the investigator, and thus network closure has no

> ontologically independent status. There is no assumption that reality itself will naturally conform to the analyst's distinction; the perception of reality is assumed to be mediated by the conceptual apparatus of the analyst, be he (or she) an active participant in the social scene under study or an outside observer (21-22).

The setting of the current empirical research along with the specific site and field access issues required a nominalist strategy for defining the network closure. The following paragraph illustrates how I made the decision through my field encounters.

During my second field visit to Chengdu for a pilot study in the summer of 2010, two key informants were being identified when I personally visited the joint office established by two of the civil society groups participating in disaster recovery at the time. Both groups quickly formed through voluntary initiatives shortly after the earthquake event and maintained their functioning beyond the short-term emergency response phase. I first came across the names of the two groups when browsing through their online webpages and began to initiate phone conversations with one informant shortly after arriving at Chengdu for my second field visit. The office spaces that belonged to the two groups were actually joined together on the same floor of a residential building in the city center of Chengdu. And this location proximity facilitated the process of identifying the second key informant who also provided me with his permission to further investigate the group's formation process in my future formal fieldwork studies.

During my third field trip in early 2011, when my formal dissertation field study actually took place, I first resumed my contacts with the two informants upon arriving in the city of Chengdu. From the first few of my preliminary interviews, the nature and the functioning of one of the civil society groups gradually became clearer to me. As this group of interest called itself a "service center" focusing its work on assisting other civil society actors engaging in disaster recovery-related activities, I found out that its functioning was actually based on the existence of other actors that the center intended to provide service for. Since shortly after the earthquake, the "center" maintained contacts with a set of civil society actors who had been engaged in earthquake response and recovery works in Sichuan. Although no formal agreement has ever existed among them, this group of actors not only emerged out of a voluntary self-organized process but also sustained their general contacts among each other over time, with the "center" functioning and being treated as part of the group member at the same time. Discovering this key piece of information during the early phase of my informant interviews facilitated my thought process in identifying a possible set of appropriate actors in my network approach, which was originally designed to look at the institutional change inside the civil society domain after the Wenchuan earthquake.

Since this set of actors did not belong to a formally-titled group where members have "widely agreed-upon labels such as General Motors or the University of Chicago" (Burt and Minor 1983), the identification process not only involved a nominalist network closure strategy but also contained certain degree of my own conceptual delineation in drawing the network boundary for the purpose of this particular study. There is also a possibility that the actors themselves might have shared a type of "we-feeling" by perceiving each other as camarades and a subjective awareness of a sense of belonging. However, relying on this strategy alone would generate more uncertainty in the data collection stage due to the informality and the fluid nature of the group (Burt and Minor 1983).

Inclusion of Actors

Moving on to the details in the relational data collection procedure, I consider two components in order to further clarify the networks to be studied. First of all, it is the task to formally delineate the network actors. I combined two available approaches to decide upon how to include the actors. One is the *positional* approach and the other is the *reputational* approach (Burt and Minor 1983). To execute the former approach, I conducted a membership test to refer to the "presence or absence of some attribute, most

commonly the occupancy of a position in a formally constituted group" (Burt and Minor 1983, 23). The initial set of civil society actors that voluntarily came together to participate in the emergency response and recovery process was identified as part of a service platform being provided by the *center*[1], which in itself was also part of the group set. Although the platform itself cannot be seen as a formally constituted group with clearly identified position and membership titles, a list of their names was recorded as those who initiated contacts with the "center" after the earthquake event. This list, provided to me with the permission of the *center*'s informants, was used to serve as the member test to initially include those civil society actors that became part of the center's platform after the earthquake.

I also adopted the reputational approach in order to further delimit the boundary of actors. It is a strategy that is sometimes being used in combination with the positional approach (Laumann and Pappi 1976) and "utilizes the judgments of knowledgeable informants in delimiting participant actors" (Burt and Minor 1983, 23). The logic for this research to use both approaches originates from the issues that arose from the field. Through my field interaction with one of the key informants at the *center*, I realized that not all of the civil society actors in the initial list remained to be active or continued to be

[1] The *center* here refers to the group actor #3.

recognized as part of the platform. At that point, I decided to utilize the best judgments of the informant to narrow down the original list to only those that she recognized as active participants throughout the emergency response and the disaster recovery stage. The informant can be named as "knowledgeable" in this regard because she became one of the first volunteers working for the *center* since its establishment just three days after the earthquake event. She also remained to be the center's only long term staff from 2008 to 2011, by the time of my fieldwork in Sichuan.

The second actor inclusion rule was based on defining events or activities within which the selected actors all participated and became involved in. Recall that the central phenomenon being investigated in this study was the role of civil society in the Wenchuan earthquake recovery. Therefore, the determining factor for inclusion here is that the actors thus defined not only had to participate in the emergency response stage but also had to sustain their actions into the long term recovery period. On the one hand, since the center's platform itself came into being as a formal entity only shortly after the earthquake, the original list that it provided necessarily included all of those that participated in activities after the earthquake, both short-term and long-term. However, throughout the three years of recovery period until 2011, it is possible that some civil society groups/organizations might have been disintegrated or did not survive beyond the

emergency response stage. It was then important to distinguish those actors that were able to maintain functioning all the way into the disaster recovery period. The field knowledge of the informant was again being utilized to draw an initial boundary of those actors remained in the field for recovery purposes. But the delineation process continued throughout the preliminary stage of survey distribution stage. Some actors, upon my first field contacts through email or phone conversations, confirmed that they had not been actively participating or engaged in field activities during long term after the disaster, and in these instances, the network boundary clarification remained an ongoing process throughout the data collection stage.

Relational Content Specification

The relational data revealed two kinds of experiences about the actors being investigated. One is the *relational form* representing the intensity, frequency, strength, and direction between pairs of actors (Knoke and Yang 2008). This aspect of relations reveals the outward features of a structural system of actors. For example, the cohesiveness or solidarity of a network structure under investigation can be thought of as a form with a tendency to occur (Burt 1983) naturally in a particular social or cultural context. The other actor experience can be explored is the *relational content,* also called

type of tie, representing the structure's "substance as reason for occurring". In this research context, I explore two kinds of relational contents: communication and collaboration. In other words, it is to examine *multiplex relations* when pairs of actors are engaged in more than one type of tie (ex. communication and collaboration). The theoretical motivations to collect these two types of relational contents at the same time originated from my intention to understand the discourse of the civil society domain within the context of disaster recovery in China. Empirically, I examined both the action and the institutionalization processes among the civil society actors over their course of participation in disaster recovery.

I used the *communication content* to capture the essence of the action structures. This was necessary because during both the emergency response and the recovery periods, information seeking and exchange among civil society actors became a critical source of action for them to locate the appropriate types of activities for engagement, especially for those actors coming from outside of the Sichuan Province. As Laumann and Knoke (1987) noted that in the national policy domain, "the greater the variety of information and the more diverse the sources that a consequential actor can tap, the better situated the actor is to anticipate and respond to policy events that can affect its interests" (13).

I also used the *collaboration content* to capture the dynamics of institutionalization (Jepperson 1991) of actions over time. The concept of "collaboration" has been subject to debates in the area of public management, especially regarding the preconditions for its emergence, processes, as well as outcomes (Bingham et al. 2008). In this research, the concept is investigated as a social pattern where actors self-organize and are persistently involved in an emergent or voluntary process carrying out different aspects of a project or a program that require the long term devotion for them to practice in the field. Overall, the multiplexity investigation is designed to understand the emergence of the civil society construct after the disaster and its evolutionary processes as a result of the institutional structural changes occurring over time.

Level of Analysis

There are four alternative levels to observe the relational data. At this point, it is critical to clarify what each one of these levels of studies entails so as to provide a background for the network data collection procedures.

The first level is the *ego-centric* network, which consists of "one actor (*ego*) and all other actors (*alters*) with which ego has direct relations, as well as the direct relations among those alters" (Knoke and Young 2008, 13). Each ego can be described by the

number, intensity, and the types of ties that it has with its set of alters. For the examination of civil society in the disaster context, the above measures can be used to look at the immediate "neighborhood" of those in direct contacts with the ego actor of interest. The changes in these measures over time illustrate the ego's behavioral change both before and after the earthquake event. The second level of analysis lies in *dyadic* networks, which consists of pairs of actors. The main purpose in examining this type of network is to explain the existence of a type of relation between a pair of actors and to see whether such relation is formed as the result of actor characteristic variations. For example, if two civil society actors in the study share the same type of registration status or other attributes together, the examination of the dyadic relation will provide clarifications in depicting whether a tie would exist between the two actors of similar traits, and the direction, intensity, as well as the duration of the tie. The third level of analysis involves the *triadic* relations, which consists of a set of actors that involved in triples. One of the basic phenomena that the investigation of triadic structures examines is the process through which "friends of friends became friends". In the context of this study, as new civil society actors emerge during the periods after the earthquake event, how they chose to close a triadic relationship with two other actors will reveal the balance of the structure at the micro-level. The patterns of changes that are found over

time may be used to describe the specific features of structural evolution in the Chinese disaster response and recovery context. There is a set of 16 distinct triad types when taking into consideration of "all possible combinations of present and absent choice relations among the actors in a triple" and a "basic descriptive question for empirical network analysis is the distribution of the observed triads among the 16 types, a summary tabulation called the *triad census*" (Knoke and Yang 2008, 14). I will elaborate more on this topic in the data analysis section and illustrate its incorporation in the modeling of network dynamics.

The fourth level of analysis deals with the *complete networks*. It is a macro-level analysis as compared to the previous three micro-level relations. Information about every relation among all the actors are being collected "to represent and explain an entire network's structural relations" (Knoke and Yang 2008, 14). This research study collects data on the complete networks emerged in the civil society domain after the 2008 Wenchuan earthquake. The purposes for focusing on collecting the complete network data are two-fold. One is to represent the structural emergence and evolution of both the communication and collaboration networks formed by civil society actors. Positions and roles are to be identified as the complete networks undergo changes throughout the periods before and after the earthquake event. The second purpose of looking at complete

networks is to investigate the hypotheses tracing the causes and consequences of the structural variations.

The Survey Questionnaire Method

In order to collect the thus specified relational data on complete networks, I adopted a survey and questionnaire method as part of my data collection procedure. Network studies in general draw extensively on the survey and questionnaire methods (Carrington et al. 2005). The first section of the survey questionnaire was designed in to collect: 1) the attribute data regarding actors' date of establishment, registration status, and the types of activities the actor engaged during the disaster recovery stage; 2) the opinions of the respondents representing their group/organization on factors contributing to disaster preparedness[2]. Although the study's primary focus is on examining relational data, actors' attributes are incorporated as an integral part of the research, especially when tracing the causes of the structural variations in network dynamics.

The second section of the survey and questionnaire instrument compiles a roster list[3] of all the actors that were being considered after going through the previously stated

[2] Please see Appendix 3.4.1 for original survey questions.

[3] Please see Appendix 3.4.2 for a sample of the original roster list of the survey.

boundary specification process in the field. The provision of the entire list of names will provide the opportunity to allow "respondents to recognize rather than recall their relationships" (Carrington et al. 2005, 10). Along with the roster list of actor names, the response formats utilized the "*binary judgments*" or "*sociometric choices*" (11) design within which respondents specify whether the groups/organizations that they represent had and/or are having a particular relationship with each actor on the roster. Two general categories of relational contents are being specified, one is the communication ties and the other is collaboration ties. Within each category, the respondents were given three sub-categories illustrating time phases of: 1) before the earthquake, 2) during emergency response period, 3) during the disaster recovery period. Therefore, a total of six categories were illustrated for the respondents to specify whether they engaged in communication or collaboration relationships, as well as the duration of each of these two types of ties before and after the disaster event.

It is possible that one type of uniplex relationship may not be conceptually distinguished clearly with another (Burt 1983). One example is the respondents' difficulty in drawing the line between communication and collaboration ties in this survey. Therefore, a brief explanation of the nature of these two kinds of content domains

was being provided at the beginning of the roster[4] section in the survey. I clarified two aspects of the relational contents for the respondents. First, "communication" was further defined as those activities related to "information exchange". And "collaboration" was clarified as those related to building up field projects together. Such referral elicits the long term and the persistent aspect of the collaborative relationships. Secondly, due to the lack of clear definition of the time span of emergency response and the disaster recovery periods, I restricted the former to be within a timeframe from seven days to one year after the earthquake event, thus including both the immediate response and short term emergency response. The recovery period was restricted to anywhere between 2-5 years or longer. Thus, by the time that the respondents were filling out the survey in 2011, it was actually three years after the disaster event and would fall within the recovery stage. One last clarification I make in this section is to define the nature of the civil society actors. One of the main research purposes in this study was to trace the origins and the development of the newly emerged grassroots groups after the earthquake. These actors can be both formal and informal in terms of their institutional status. For the informal

[4] The first section of the survey was composed of questions gathering information of actor attributes. The second part of the survey was composed of a list of names of all the actors being examined in the study, and each actor can name however many others that they have had communication and collaboration relationships before and after the earthquake. The complete list of names is called a roster.

ones, I name them as “teams”/“social groups”. And for the formal ones, I call them “organizations”. In order to reflect this conceptual consideration in the survey, I used the phrase “teams and organizations” to include both types of civil society actors.

Another dimension of the central research question is to explore the dynamics of the interactions among the actors inside the civil society, the state, and market domains. One issue I encountered in the field when designing the survey questionnaire was the format through which the actors inside the state and the market domains can be properly incorporated into the roster list without further burdening the respondents’ loads. During the emergency response and the disaster recovery periods, the Chinese government from central to the local branches, were all actively involved in the process. If listing these actors one by one in the second section of the survey, the roster would quickly become unmanageable considering the time and efforts of the respondents. The similar issue occurred with listing the market actors such as private enterprises and businesses that participated in the two periods after the earthquake. Upon reflecting the purpose of my research study, it became clear to me that the actors inside the civil society domain are the key focus of attention. I therefore created a design to incorporate two macro-level actors each representing the aggregate of all the micro-level actors acting inside the state and the market domains. This way, when a civil society actor named a relation towards

one of these two actors, the tie itself would demonstrate the existence of a connection between the civil society actor and any of those actors inside the state/market. The direction of these ties can only be going from the former to the latter and not vice versa. Since no actors inside the state and the market sectors were designed to fill out the survey, the ties that are being named towards them will necessarily be one-directional without any reciprocity. Essentially, the information being captured here can be regarded as a type of cognitive mapping of the perceived cross-sector structure from the civil society actors' perspective.

Overall, a total of 138 actors comprised the roster list. Among them, 136 are civil society actors. The state and the market were treated as two separate actors and listed separately in the roster. Each one of the actors were given a unique code number so that the identities of the actors would remain anonymous and being protected, consistent with IRB guidelines. The final revision of the survey questionnaire was completed in the field[5].

Qualitative Data Collection

The main purpose of the qualitative method in this study is to trace the motivational origin of the action taken inside the civil society domain as well as the

[5] Please see Appendix 3.4 for my field notes regarding the finalizing process.

driving factors behind the institutional dynamics being maintained over the long term. The quantitative relational data captures the structural forms, patterns, dynamics and the rules governing the evolution of the structural changes over time. However, they do not provide sufficient explanation on the initial emergence of relational structures taking into consideration of the social and cultural contexts within which they arose in the first place. In general, "network analysts rarely capture the complexity of naturally occurring relations. Their concern is less the complexity of the relationship between pairs of actors than it is the complexity of the structure of relations among many actors as a system" (Burt 1983, 35). But in order to understand the role of civil society in the Wenchuan earthquake recovery, deciphering the complexity of how relationship originated and the motivational factors that prompted certain role formation are as important as the concerns for the complexity of the structures themselves. Therefore, qualitative data in this research serves two complementary purposes: 1) explaining quantitative network results; 2) expand and built on the relational data.

In this study, I collected my qualitative data concurrently with the network data. Since the qualitative research questions inherently build on the collection of relational data, the initial purposeful sampling of individuals for collecting qualitative data overlaps with the boundary specification process in relational data collection. The identification of

civil society groups and organizations as network actors was based on a combination of positional and reputational approaches focusing particularly on those who actively participated in the Wenchuan earthquake response and recovery in 2008. I then collected three main forms of qualitative data and they are illustrated in the following sections.

The fieldwork was conducted over a period of four months in the metropolitan region of Chengdu, Sichuan province. My primary qualitative data collection method was in-depth interviews and direct observations. They were supplemented by reviewing archival sources as well as audio/visual documents. The main advantage of collecting data from various sources is that they help build an information-rich case study—a "thick description" to use Geertz's (1973) terms and convey the depth of the case by allowing multiple perspectives from the experiences of the participants to be revealed.

In-depth Interviews of Group/Organizational Informants

As the survey questionnaire for the collection of relational data were first being sent out to respondents through mass email distribution, three contact strategies were being utilized to schedule follow-up interviews with informants: 1) phone conversations; 2) QQ messenger conversations; 3) email correspondence. In my actual field encounters, these follow-up contact strategies worked together not only to help me confirming

interviews but also worked as another round of reminder for respondents to fill out the survey questionnaires.

Initially, a total of 136 civil society actors were being listed on the survey roster. And they can be described by three sub-categories. The first set consisted of domestic formal NGOs that already obtained formal registration status. The second comprised domestic informal social groups. Most of them were established after the Wenchuan earthquake and had a grassroots nature. The third type includes those foreign NGOs that were formally registered and established field offices in China. Since the main research emphasis for this study was on the emergence and institutional change of civil society domain, I primarily focused on interviewing informants from the first and the second category. Essentially, the informants who later agreed to be interviewed were also included among the survey respondents who filled out the original questionnaire.

I initially hoped to conduct all of my interviews in a semi-structured fashion and completely audiotape them. But my first field encounter experience at the local community level took the data collection strategy for a surprising turn[6]. This is because in the field, I realized that the original semi-structured design needed to be complemented by un-structured and open-ended interview questions to bring about the motivational

[6] Please refer to Appendix 3.2.1 for detailed explanations.

aspect of the informants' experiences. At times, field encounters would also happen at unexpected circumstances which rendered audiotaping not possible. Therefore, I also took interview notes to jog down the main conversations and key words being mentioned by the informants.

For the semi-structured face-to-face interviews, I used an interview protocol to help guide the main structure of the flow of my questions. The table in Appendix 3.5 shows some of the preliminary areas of focus and theme concentrations. As the interview process unfolded, the focus of questions in each theme had undergone some minor adjustments according to the varying experiences of informants. Each of the face-to-face formal interviews lasted about 1-2 hours. In between the scheduled formal interviews, I also conducted computer-mediated ones using an online messenger tool called "QQ". The online chat tool such as QQ was a very popular communication medium among Chinese people in general and played an important role in facilitating contacts among volunteer groups and organizations after the earthquake. The functioning of the chatting domain on QQ is similar to those provided by Yahoo or MSN Messengers. A user name can be chosen and a unique QQ identification number will be generated once the software is downloaded and registered without any charges. As soon as I was provided with and being permitted to use the list of civil society actors by the key informants from the

"center", I realized that the only medium for contacting some of the respondents was through their QQ identification number. I therefore registered as a QQ user and started utilizing it as one of my survey distribution medium. Along the way, as I initiated chatting sessions with my respondents, I found that they were more comfortable in opening up and carry on the conversation as compared to phone contacts. This happened especially for those respondents from the smaller and more grassroots groups. At times, they would start elaborating on their stories and revealed the emotional side of their experiences in participating in the disaster response and recovery. In these conversations, I used more unstructured and open-ended format of interviews in order to bring about the motivational side of my respondents' experiences. Either at the beginning or towards the end of each of our QQ conversations, I always made sure to confirm two things: 1) they have received my survey questionnaire correctly and to encourage them to fill it when time allows; 2) ask for other forms of contacts such as work phone number or email address so as to arrange for possible in-person follow-up interviews. I then recorded and saved the online conversations as part of my field interview folder on my computer.

Lastly, some of the advantages of collecting the interview form of data are worth mentioning. Providing a private setting for face-to-face interviews with my informants is critical in the assurance of confidentiality, in gaining their trust, and in creating an

inviting environment for them to open-up comfortably. This also allowed me to re-shape my interview questions that are tailored to individuals so that maximal use of time can be ensured and unique perspectives of each interviewee can be drawn upon (Padgett 2008). Overall, the primary purpose of conducting the semi-structured interviews along with open-ended questions was to approach the qualitative part of the research question through a set of themes. And these themes were weaved through stories of how informants lived through and experienced the earthquake event itself as well as the response and recovery processes.

In summary, the in-depth interviews were collected regarding two of the following groups. In the first group, a total of 16 interviews with NGO informants were conducted and recorded. The respondents of the survey questionnaires would also be the group/organizational informants thus being interviewed. Therefore, during each of the interview sessions, the informants would reflect on both their own personal lived experiences since the earthquake event and the institutional development experiences of the different types of NGO groups/organizations that they were part of. In the second group, a total of 8 interviews were conducted with a set of local community residents whose unique experiences provided a "consumer" perspective of the disaster recovery process.

Ethnographic Field Observations

In order to capture the depth of the informants' experiences through the earthquake event and how they led to the emergence and evolution of civil society institutions, I also used the ethnographic direct field observations to accompany the interview data collection strategy. This is because the social and cultural contexts from which the actions occurred in the wake of the event of a disaster were all shared together by this group of actors in the civil society domain. Exploring the origin of their actions cannot be separated from understanding their shared beliefs and interpretation of the meaning of civil society manifested through concepts such as solidarity, power, risk, and resilience.

Throughout my stay in the field, I directly observed some of the activities organized by civil society actors and recorded my observations through photos, audio/tape, and written field notes/memos. On-site participant observations had significantly helped me getting to know the group of civil society actors that I intended to investigate, particularly in gaining their trust by becoming part of their daily life. Revealing my identity and the purposes of my study in the field actually enhanced a sense of trust on the part of my informants. And upon knowing the purpose of my research study and having been reminded that I would be remaining in the field for some

time, many of the informants became less guarded and even expressed their gratitude for me in knowing that their works were indeed being cared about and recognized. Every field encounter with my informants became a bonding experience between me as a researcher and the group of civil society actors that I strove to understand. I slowly came to realize their side of reality and the type of cultural experiences that they shared and shaped by the disaster event. The more sites I visited and the more interviews I conducted, informants started inviting me to their fieldtrip activities, meetings, and gatherings. And by being a participant observant in the process, an understanding of the lived-experiences of the informants gradually became clearer to me. These pieces of in-depth information regarding the culture of the group setting cannot be replaced by any types of face-to-face interviews, or through other interview mediums.

Lastly, this kind of immersion of in the field through the observation of the informants' lives and works on the ground also helped me staying motivated when my own field conditions turned out to be severe. A few of the field visits with my informants ended up with rather difficult traveling and living arrangements. But in those circumstances, a self-reminder of the original purpose of my research and my goal in providing an account of the setting and actions that would be as truthful as to those who experienced the processes eventually kept me staying encouraged and motivated.

From a researcher's point of view, my ethnographic field experiences provided me with enhanced clarity of the reality lived by the local people through their lens of seeing the Wenchuan Earthquake recovery. By initially following the original interview and fieldwork plans (see Appendix 3.1, 3.2, 3.3), I quickly recognized a pattern of how people on the ground had experienced and framed the earthquake event and their participation in the recovery process. This allowed me to have the opportunities to make revisions to my interview protocols so that the life histories of my informants can be closely reflected through my study. There were also some unexpected field obstacles[7] that prompted me to put a primary field investigation focus on gaining insights of the actions inside the civil society from the original plan (see Appendix 3.2.1). With a "detour" approach, I was able to look at the recovery process through cross-sector actions from the network data later on being collected.

Documents and Audiovisual Recordings

I kept a field journal for three purposes. One was to record my own experiences in my field encounters. The second one was to provide a supplementary account of some of the interview sessions. For example, in some incidences, the field encounters happened in

[7] See Appendix 3.2.2 for detail.

such a rush and there would not be enough time for me to prepare and get ready for audio recordings. I would then use the journal to write down the key ideas and conversation themes. Thirdly, I would use the notes to jog down some of the ideas that came to my mind regarding the research work in general or in reshaping certain parts of my interview protocols.

I also collected public documents in the forms of official government memos and guidelines as well as online archival information about civil society groups and organizations. The former was collected to illustrate the planning and policy context of the Wenchuan earthquake recovery, as part of the general policy background of my study. The online archival resources were retrieved for the purpose of depicting the establishment and activity-related information of civil society actors.

In addition to the traditional types of documentation, I also gathered visual materials during my field visits. I started gathering these materials when I first visited Dujiangyan city in July 2008 with a group of international planning experts who were invited by the Sichuan provincial government. My second trip back to Dujiangyan in July 2010 resulted in another round of collection of photographs recording the housing recovery progresses of the local people. During my dissertation fieldwork in 2011, I

primarily took my own photographs in order to elicit the lives and works of my informants. Sometimes, the informants would provide me with their own photographs, video recordings, and written biographies.

Methods of Data Analysis

Sequential Data Analysis

Figure 3.4 below shows the data collection and analysis procedures. The arrow signs represent the sequences of each step taken.

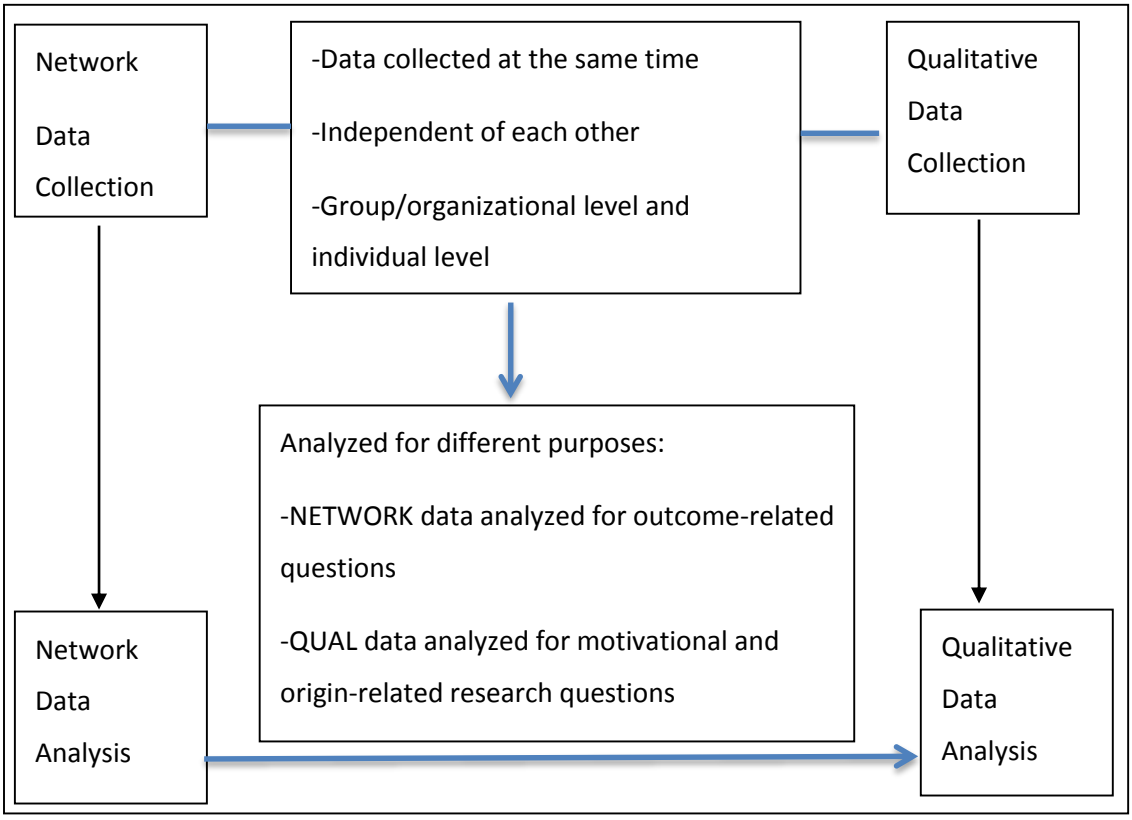


Figure 3.4. Concurrent Data Collection and Sequential Data Analysis Procedures
Source: (Creswell and Clark 2007) adapted by Lu, 2013

I analyzed the data in a sequential manner with the first step to conduct the structural analysis of the relational data. This is to reveal the patterns and rules that could explain the emergence and dynamics of institutional structures within the civil society domain. The qualitative data analysis follows as a second step in the data examination procedure. Qualitative data, in this research study, was designed to expand and build on the relational data in order to bring forth the agency origin and motivational sides of the experiences and stories. Therefore, first providing a structural description of the interaction activities within the civil society domain serves as a relational basis within which qualitative data can then be utilized to explore the issues of agency and emergence. The two types of data are designed to answer different sub-sets of the general research question. But at the same, the qualitative data plays a complementary role for the network data in providing a comprehensive understanding of the discourse of Chinese civil society after the Wenchuan earthquake.

Quantitative Data Analysis

Analysis of Descriptive Statistics using UCINET

The Handling of Relational Data

The method for analyzing social structures is called "Social Network Analysis" and it is a set of methods that particularly examines the relational aspect of structures (Scott 2001). The first step I took was to organize the relational data being collected. Recall that each of the actors was given a unique identification number in the survey roster list. I constructed a "node list" data structure in Excel to store the original data form. The node list data format is consisted of 138 columns and each column is represented by the identification code for one actor. Following the unique code of each actor, each row is consisted of the code numbers of all other actors that this "ego" actor nominated in the original roster. Two separate files are created to store the communication and the collaboration network relations. The actor attributes data was stored in a "case-by-variable" data matrix where each actor is represented by a row while each column stands for one of the three attribute variables: 1) date of establishment; 2) registration status; 3) location.

The two sets of relational data were then imported into UCINET, a social network analysis software package. The storage of relational data can be either in "incidence" or

"adjacency" data matrices. The incidence matrix is structured as case-by-affiliation matrix with its rows representing actors and columns representing the three attributes as affiliations. This "two-mode" rectangular incidence matrix can further derive two square incidence matrices. One one-mode square matrix is case-by-case where both of it rows and columns will represent actors. The individual cells will show the number of common affiliations that a particular pair of actors has. The other one-mode square matrix is in the form of affiliation-by-affiliation incidence matrix. Both of its rows and columns show affiliation types such as location, registration status, and date of establishment. The individual cells in this matrix will be showing whether each pair of affiliations is linked by common actors.

In providing the structural description of the network data, I treated the actors as cases and conducted the analysis by using actor-by-actor (case-by-case) one-mode incidence matrices to illustrate the social structures of communication and collaboration networks. In this particular study, the strength of relations among pairs of actors was not collected. Therefore, each individual cell in the adjacency matrices represents only the existence of a tie. Essentially, the adjacency matrices are composed of "1" and "0" entries with the former representing the presence of a tie and the latter representing the absence of a tie.

Since in the original survey, each actor was asked to nominate others that it had initiated communication and ties towards, the relational data inside the adjacency matrices will represent directions. For example, an entry of "1" in cell (2, 5) would mean that there is a presence of relation from actor #3 to actor #5, being interpreted as the former took the action to initiate contact to reach to the latter.

Sociograms and Graph Theory

In this section, I illustrate some of the formal languages used in graph theory to describe network structures and other features. First, the structuration processes inside the civil society domain are all represented by a set of graph diagrams derived from the adjacency matrices. In a graph, each *point*, or node represents one civil society actor**.** And the *lines* between the points can represent two types of relations: communication and collaboration. All the analysis being conducted in this study are based on *directed graphs* as the actors can take the initiative to reach out to others and the nominations might or might not reciprocate. Thus, the directions are represented by attaching an arrow to each of the directed line. If two actors are connected by a line, it can be said that they are *adjacent* to each other. For communication networks, this means that one civil society

actor is directly connected to the other. If the direction of the arrow goes both ways, then, pieces of information can flow back and forth between the two actors. For any one of the actors, the group of other actors that it is adjacent to are termed its *neighborhood.* And the number of actors in the neighborhood is called the *degree of connection*, a numerical measure of the size of its neighborhood (Scott 2001). For directed relations being investigated in this study, the total number of other actors that each ego actor directed communication or collaboration ties towards are termed as *out-degree* of the actor. The number of actors who had ties nominated toward the ego actor is termed as *in- degree* of the focal actor. The out-degree measure in this study can be generally understood as the agency actions shown on the part of the focal actor. If the measure is relatively high for one civil society actor for a given period of time, it means that this particular actor's "agency freedom" (Sen 1999) is being activated and it was willingly to engage in communication or collaboration relationships with other civil society actor.

Actors not only can be connected by direct lines of relationships, but also can be reached through indirect lines of connections. In order to delineate these indirect relationships, a few concepts need to be clarified. A *path* is measured by a sequence of lines in a graph in which "each point and each line are distinct"…and the *length* of a path is measured by the number of lines that make it up" (Scott 2000, 68). The distance

between a pair of actors is measured by the length of the shortest path (*geodesic distance*) that connects them.

Multi-level Network Analysis

The structure of the section on network descriptive statistics is arranged in such a way to include both micro and macro-level analysis of the communication and collaboration network structures. At the macro-level, I first explored the general basic demographics that can be used to describe the structure of the two types of network contents. As part of the general outlook on the actions taken by civil society actors comparing before and after the 2008 earthquake, changes in actor out-degree and in degree measures in the communication network was examined. For each period, subjective ranking categories were created to illustrate the key changes of the composition of top-ranking actors over time. Then, the basic descriptions of the network structures are being explored from a macro perspective, named "connection", representing how actors are connected to each other through a set of different sub-categories. These network properties include: density, distance, diameter, geodesic paths, and flow.

Following the general macro-descriptions of the communication and collaboration networks, I explored the micro-level of the actors' experiences by looking at the "embeddedness" of actors for each type of structures over the three periods of time: before the earthquake, emergency response period, and the long term recovery period. The concept of "embeddedness" is examined through the measures of *reciprocity, transitivity, and clustering, group-external and internal ties*. Reciprocity measure examines the smallest feature of embedding that can be extracted by the dyadic ties between a pair of two actors. The degree of reciprocity of the network structures and the type of network relations are being the focus of the attention. At the second level, the measure of transitivity was being explored for triadic relationships that involve three actors. The existence and the process through which a tie is created to close the triadic connections among three actors reveal the emergence of the most fundamental forms of social relationships (Hanneman and Riddle 2005). The characteristics of the triadic relationships among actors depict aspects of hierarchy, equality, and exclusivity of groups in a directed network. In the third level of the "embedding" analysis, I look at the tendency for the two types of networks to have *dense local neighborhoods* or *clustering*. The clustering measure expands from reciprocity and transitivity to see how actors are embedded in its own local neighborhood. Higher degree of overall graph clustering in the

communication networks at any given point of time period, for example, would mean that there are concentrations of information sources existing inside the network structure. Identifying the actors with larger neighborhoods builds up the foundation of further investigating the characteristics and the emergence of these actors. The fourth level of embedding deals with the macro-level analysis of how ties exist inside the pre-determined group as compared to outside the group. In this study, I am primarily interested in the patterns showing how the group of actors with formal registration status would interact with the group of actors without such status. The E-I Index was being calculated and examined across groups and actors.

The macro-level analysis of the social structures is examined from two perspectives. One is the "top-down" approach, which is chosen to look at the network structures as a whole to detect ways within which the overall structure can be decomposed into smaller units. This is another way of understanding "solidarity" revealed through how actors were involved in group-selection. Actors are not only actively building their own neighborhood, their decisions and behaviors are also influenced by the larger sub-structures. Identifying these sub-structures and their patterns of dynamics over time provide an outlook on the possible structural constraints or opportunities faced by actors when they were constructing the networks at the same time.

The measures being analyzed in this section include: component, K-core, and Community structure detection using Girvan-Newman Analysis[8].

The second perspective in examining groups and sub-structures can be named as the "bottom-up" approach (Hanneman and Riddle 2005). It is designed to understand how the overall structure of the networks emerges from and linked together by smaller units. I chose to study three kinds of sub-graphs: *cliques, two-clique* and *two-clan*. A clique is a sub-structure that represents the most tightly inter-connected relationship among its members. It is the "maximally complete sub-graph" where all the possible pairs of points are directly connected by a line or are adjacent to one another (Scott 2000, 114). The emergence and changes in the clique structure provide indicators of a process that can help explain the sub-grouping behaviors of the civil society actors. The two-clique and the two-clan concepts relaxed the strictness in defining a clique and allowed me to expand beyond the direct relationships. Overall, the micro and macro level of analysis of the sub-structures of the communication and collaboration networks are designed to explore the structural emergence and transformation of civil society institutions after the earthquake. It allows me to explicitly point out the specific patterns

[8] The Girvan-Newman Analysis is a method used to identify community structures in a given network environment and it is made available in the UCINET social network analysis software.

of the structuration process inside the civil society domain, as well as the structural change patterns across the domains of civil society, the state, and the market system.

The last two sections of the descriptive analysis are designed to explore how role identities are being formed among civil society actors in the two types of network relations. I also used this part of the analysis to re-examine two key concepts implied by the central research question from a network perspective. One is the definition of the idea of "power". In the context of this study, this concept is not examined through actor attributes but rather with a relational lens. A group/organizational actor can be "powerful" not by the more readily observable outside traits, status or possessions, but by the way it relates to others in a particular type of network setting. The measures being calculated and analyzed in this respect are *degree centrality* and *betweenness centrality*. The other related idea is how "roles" can be defined in the discourse of institutional change of civil society after a catastrophic event in China. This part of the analysis is designed to look at how "new" positions and roles can emerge as the result of agency actions. The term "new" is being used because at times, one actor might communicate and collaborate in a "similar" manner as compared to another actor, but neither of them will recognize such relational patterns within which an emerging "role" can be defined. In these cases, crystalizing these "hidden" identifications is a constructive step in conceptualizing

Chinese civil society in times of disaster response and recovery. I calculated the measures for actor structural equivalence using the CONCOR method to execute this section of the analysis. At last, a simple homophily model was proposed by using ANOVA Density Models in UCINET. The main purpose of this analysis is to examine whether there is a tendency for civil society actors to have a preference for within group ties based on their registration status.

Longitudinal Modeling of Network Dynamics using RSIENA

Part I of the quantitative analysis is designed to lay down the conceptual and structural frameworks within which the patterns of interactions among actors emerge and being sustained over time. A set of specific mechanisms of actions and processes of interactions among civil society actors are uncovered and depicted explicitly through structural presentations. However, the descriptive part of the analysis is not sufficient in specifying the underlying patterns of network behavioral change that can help explain the dynamics of network evolution from before the earthquake to long term after the disaster event. In order to further look into this aspect of the story, Part II of the quantitative data analysis is designed to explain the impact of previously-found network patterns on behavior and attitude, reflected by actor's choice of ties.

This part of the analysis predominantly used the *Longitudinal Modeling* technique in network analysis (Snijders et al. 2010) to particularly investigate the rules governing network evolution over time. I used the Stochastic Actor-based (SAB) Models (Snijders et al. 2010) to conduct my longitudinal analysis on network dynamics. The modeling process is based on the paradigm of statistical inference. There are two advantages for adopting the SAB models in this study context. First, the model is specifically designed to represent network dynamics based on observed longitudinal network data. Two types of such data were collected initially. One was the communication network data over the time periods of before the earthquake, emergence response state, and the recovery stage. The other is collaboration network data over the same periods of time. The second advantage of the model arises from one of its underlying assumptions specifying that actors can change their outgoing ties based on their and others' attributes, positions in the network, as well as their perceptions of the network as a whole (Snijders et al. 2010). Essentially, the model takes into consideration of both agency and structure and provides the flexibility for the inter-dependent factors to change over time. This is in direct accordance with the theoretical backdrop of this research: the paradox of action and institutional structure exemplified through the role of Chinese civil society in catastrophic disaster recovery.

I then used the SIENA methods [9] implemented in the R statistical system (RSIENA) to execute the analysis. Inside the first sub-section, I provide a specific treatment strategy for the missing data. The procedures involved using a *core-periphery analysis* in UCINET and creating a *composition change* file in RSIENA. I then provided model specifications for examining the dynamics of uniplex networks and the cross-dependencies between the communication and the collaboration networks.

Due to the particularity of this dataset pertaining to a rather drastic shift in network ties especially comparing before the earthquake to immediately after the event, I further look into the issues of "*time heterogeneity*" and "*unconditional modeling estimation*". I designed a set of modeling specifications that can incorporate the time heterogeneity issue into the estimation processes. At last, the unconditional modeling method is chosen based on this specific nature of the longitudinal network data.

[9] SIENA is a statistical analysis program to examine network data. The name SIENA stands for Simulation Investigation of Empirical Network Analysis.

Qualitative Data Analysis

Rationale for Sequential Data Analysis

Recall that the structural analysis of the relational data consists of two parts. One part is the descriptive analysis of network structures. The results of that section demonstrated that certain civil society actors occupied particularly "important" roles in terms of their embeddedness, centrality, positions, and roles. And the mere presentation of the actor attributes such as registration status, date of establishment, and geographical locations cannot decipher the cognitive and motivational origins regarding how these actions emerge. This issue became particularly apparent when trying to explain the patterns of emergence and role occupancy of: 1) the smaller grassroots civil society groups that were established after the earthquake; 2) the formal civil society organizations that established first field offices in Sichuan after the earthquake event. Although the second part of the longitudinal statistical analysis detects factors that contribute to the network evolutions, the models offered a more forward-looking perspective while taking each *state* of structural existence at different time stages as given. In other words, explaining the source of emergence by taking into the social and cultural contexts within which the agency actions arose is not a built-in focus of the second part of the quantitative data analysis. This then, left a critical part of the original

research question unanswered, and it is the sources of agency inside the civil society domain transitioning from before to after the disaster event, as well as the driving forces for the durability of agency reflected in the processes of institutional changes through the recovery period. Therefore, partially building on top of the results from the quantitative analysis, a qualitative data analysis is designed to fill in the gaps in understanding the structural discourses of Chinese civil society after the Wenchuan earthquake.

Coding and Thematic Categorization Using ATLAS.ti

First of all, I transcribed all of my interviews and stored them in separate files arranged by the names of the actors. The reason that I chose to transcribe my own qualitative interview data is because of my familiarity of the contexts where the conversations were being held. This enhanced my ability to: 1) "fill in the unclear messages" with background understanding; 2) "insert appropriate explanations and clarifications" (Padgett 2008, 135). In order to stay close to the meaning of the account provided by my informants, I conducted minimum editing and revision of their original message, and used brackets only in times of clarification of certain terms.

In the survey questionnaire, I provided the respondents written promise to maintain strict confidentiality by using unique identification codes for each actor.

Therefore, the actors' names appeared in the interview conversations were all replaced by their identification numbers when transcribing. Also throughout the process, I transcribed the complete conversations with each informant one by one in order to maintain the accuracy of the data and also as a way of showing respect for the information and stories being offered by my informants. Since my fieldwork was conducted in Sichuan province, in mainland China, the original transcription was in simplified Chinese.

The transcriptions in its original language are then imported into ATLAS.ti qualitative data analysis software. The transcribed conversations with each informant are maintained as separate files so as to make it easier for future retrieval. Throughout the coding process of my interview transcriptions, I kept the files in their original Chinese language. This is because as a native speaker of Chinese and having done the fieldworks in China, the original search for meanings and interpretations will come more naturally and come closer to the first-hand messages being passed on by the informants. This also helped me stay alert and keenly identifying some of the hidden meanings that went beyond the surface descriptions so as to maintain the purposes of finding "thick" and "deep" ethnographic interpretations uncovering "the tacit meanings of cultural beliefs and practices" (Padgett 2008, 140).

At the beginning of the coding process, I created code labels to relevant segments of the transcripts based on the following primary topical ideas: 1) action and motivation; 2) the incipience of civil society; establishment process; 2) civil society, state, and market; 3) institutional formation, function, and structure; 4) self-awareness and solidarity formation; 5) institutional sustainability motivations; 6) emergency response and recovery activities; The decision to use these labels originated from the research question that the qualitative part of the study intended to answer. For one, it is to investigate the emergence of the key civil society actors found in the quantitative analysis. The accounts of the informants further guided me to break down this "emergence process" into those related to individual experiences, including individual action and motivations; and those related to institutional formation when activities started to show patterns of group formation. Secondly, I intend to investigate the long term institutional change that the actors experienced over time, and the driving factors supported their sustainability. Subsequent to the initial coding process being carried along after many more transcripts, I gradually recognized a pattern related to how informants told their stories. The topical ideas that I initially used to create my primary code labels can be further collapsing into a set of categories [10] such as: 1) Individual-level actions and motivations; 2)

[10] This further synthesis of categories did not prompt further changes to the original coding.

group/organizational actions that represent primary emergence of civil society; 3) institutional change processes, both within sector and across sectors; 4) individual and actor-level sustainability motivators. These categories also emerged in a chronological order as each of the informants reflected the changes they experienced in both of their personal lives and their engagement as part of the larger civil society actions after the earthquake event. At this stage of the analysis, the coding process became more selective as I pondered how the categories thus generated are interrelated to each other and in what ways they can be organized as part of a conceptual framework.

As the original codes were being synthesized and the categories were being compared in the last phase of the analysis, a set of themes and categories became apparent (see Appendix 3.6). I organized these properties into three sets of themes that can be ordered chronologically to illustrate a process-oriented approach in discovering the sources of agency action in the civil society domain.

At same time when the three themes and their sub-themes were developed, I was still open to generate new codes as new topics might emerge upon extracting meanings from the stories being told by the informants. I stopped the process when eventually no new codes were needed and the primary interpretations of informants' accounts no longer

surpassed the already existing themes and their sub-themes. I also recorded memos in notebooks in order to jog down the possible categories of interpretations. Incorporating a multidisciplinary perspective into the interpretation process was helpful in bringing about the different ways in understanding the accounts of informants. For example, one civil society actor was engaged in activities related to community health issues after the earthquake and the informant was reflecting on her original motivations into this aspect of disaster recovery. Some knowledge in how social supports can be built through social network interventions in promoting health in communities would be a plus in designing and expanding the conceptual frameworks thus formulated.

Interpretation and Presentation[11]

Further interpretation and presentation of the analysis was then organized into an actor by actor format for illustration. For the case of each group/organizational actor, both description of the case and the relevant interpretations were presented according to the themes being developed in the last stage of the coding process. The highly relevant direct quotes that can demonstrate the particular interpretation point being made or can

[11] Please refer to Appendix 3.7 for discussion regarding the validity and reliability of data.

illustrate the contexts within the themes were being developed were then selected and inserted.

I reserved the translation process into this last stage of analysis, after all the relevant segments of quotations were embedded into the conceptual discussions and all interpretations were completed. This is to reserve their original meaning in Chinese with as little secondary interpretive obstructions as possible. One main obstruction is to translate the passages too early on in the coding process or in the middle of the writing process, which might lead to incomplete representations of the informants' point of view and the essence of the message that they were trying to pass on through their stories. Therefore, I conducted my translation procedures[12] towards the end of the presentation and the writing process. Another advantage in this kind of strategy for designing the timing for conducting translation is that it can serve as a "safety net" to spot for any pockets of incompleteness in the earlier meaning-making process.

Throughout my writing process in reporting the results of the qualitative analysis, I used the interview accounts of informants in three types of quoting procedures (Creswell 2007). I primarily used longer quotations in order to convey the complexity of various processes. This is in accordance with the central phenomenon that the qualitative

[12] All translations are my own.

section was designed to investigate. The emergence of agency action and the institutional development in the civil society domain after the disaster event are themselves revealed by a set of processes. In order to fully understand how the crisis event was experienced, interpreted, and enacted through agency behaviors, this kind of longer quotes is used to bring about the nature of the processes as close to the cultural context of the informants as possible. The second type of quotation strategy is the usage of direct dialogues either between the informant and me or between several key informants. Sometimes, the central ideas being conveyed by one informant were being brought up through relatively short statements, and to simply single those out as a shorter quote would not be useful in understanding the context from which the ideas or thoughts arose. Thirdly, shorter embedded quotes were also being used to be inserted into my narrative and interpretations. This is done to emphasis on pinpoint a particular point with evidences that can directly and clearly support the discussion of a theme.

Chapter 4

Tracing Actions and Processes

Overview of Actor Characteristics

One-mode Network Data Description

In this study, survey questionnaires were distributed to a total of 136 groups and NGOs who have participated in the recovery of the Wenchuan Earthquake since 2008. A total of 63 questionnaires were returned. The response rate was 46.32%.

In table 4.1 below, I illustrate civil society actors according to their attributes:

Table 4.1. Attribute Data Description

Non-registered social groups	21.3% (29)
Sichuan-based grassroots groups and NGOs	75.7% (103)
Established after 2008 Wenchuan Earthquake	57.4% (78)

Note: Percentages and counts are based on 136 civil society actors.

The percentages in each category were calculated using the attribute data of 136 actors. Although not all of them responded to the survey, it is possible that the non-respondents could be nominated by other respondents[13]. In these incidences, network ties would be

[13] In social network analysis, when one actor names another actor as communication or collaboration partners, one tie between them exists. Such a tie is one-directional if the other actor does not respond to the survey. However, this uni-directional tie can be recorded as part of the network structure with the inclusion of the nonresponsive actor.

counted as existing connections but without the possibility of being reciprocated. It is therefore important to capture the comprehensiveness of the variety of attributes among all actors.

First of all, among all the civil society actors being surveyed, non-registered informal social groups constituted 21.3%. The emergent social groups formed after the disaster was being accounted for in this category. By "emergent", I mean the grassroots, spontaneous, and the voluntary nature of these groups. In the Chinese context, the registered civil society actors are further divided into two sub-categories. One is the formal status of registration with the Ministry of Civil Affairs. The other one is the status registered under the business category[14].

Among the 136 civil society actors, 103 were based in Sichuan Province. This category included not only the grassroots groups and NGOs formed locally, but also the actors who established long term field offices for disaster recovery in Sichuan after the 2008 earthquake. Together with the "locally-born" actors, they counted as 75.7% of all the civil society actors. The rest in this category are either domestic NGOs practicing short-term for disaster response or international NGOs that had previous practicing

[14] See Appendix 4.1.

experiences in China but did not have formally registered field offices within Sichuan Province.

Another category I distinguished was based on the date of establishment of the civil society actors. The primary purpose of this part of the design was to see whether and to what degree did the earthquake event triggered agency actions inside the civil society domain. A total of 78 social groups and NGOs came into being after the disaster and they contributed to 57.4% of all the actors.

Two-mode Network Data Description

Two-mode network data was also collected in order to look at the specific activities that the actors engaged in during the disaster recovery period. I distinguished 7 types of recovery activities in general and they were listed in table 4.2 and figure 4.1 below:

Table 4.2. Civil Society Participation in Earthquake Recovery Activities (70 actors[15])

Types of Activities	Counts	Percentage
Housing	16	22.9%
Elder and disabled	28	40%
Women and children	32	45.7%
Environment	24	34.3%
Psychology	24	34.3%
Livelihood development	31	44.3%
Other	32	45.7%

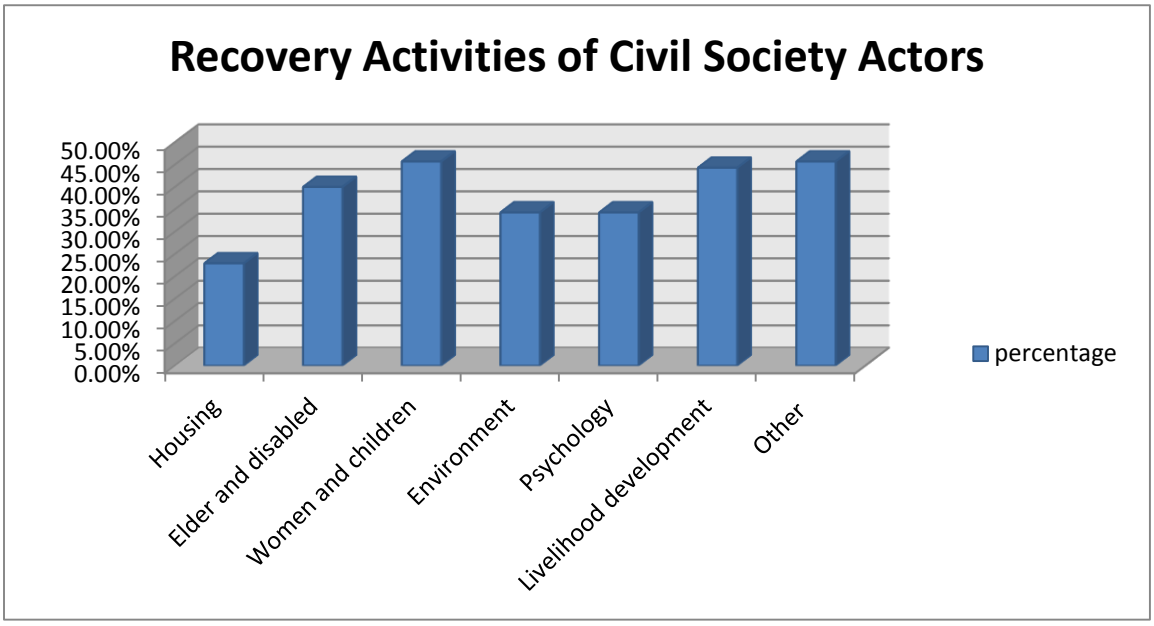


Figure 4.1. Recovery Activities of Civil Society Actors

As figure 4.1 shows, recovery works related to the disadvantaged groups such as women and children ranked the highest among all others. Livelihood development was another

[15] See Appendix 4.2 for further explanation.

aspect of recovery that drew long term devotion of civil society actors. Some of the functions being performed in the "others" category are worth mentioning. One area of engagement that was named regularly was activities related to community re-construction and re-development. Various terms were used by the respondents to describe their activities under this category, and they include: "social recovery", "community capacity-building", and "Integrated service provision to local communities". In addition, survey respondents also provided information regarding the types of their recovery activities under the "other" category. They were: 1) Participating in community infrastructure reconstruction such as water pipelines, community playground, and roads; 2) Financing school reconstruction; 3) Basic infrastructure rebuilding; 4) Providing family education and other educational supports; 5) Medicine delivery; 6) Information exchange facilitation; 7) NGO capacity building and rural cooperatives capacity-building; 8) Material resource collection and distribution; 9) General supportive type. From table 4.2, it is clear that participation in these "others" category contributed to 45.7% of civil society actors' recovery activities, which is a tie with the activity related to "women and children".

Perceived Institutional Factors for Resilience-building

In the original survey, I also asked my respondents to name the factor(s) that they perceived to be most important in enhancing the civil society's capacity for disaster preparedness. Table 4.3 and figure 4.2 illustrate the results:

Table 4.3. Perceived Importance of Institutional Factors for Resilience-building (70 Actors)

Types of Institutional Factors	Counts	Percentage
Government support	42	60.0%
Private enterprise support	11	15.7%
Social support (collaboration with other groups and NGOs)	32	45.7%
Preparedness coordination (communication platform-building)	26	37.1%
Other	13	18.6%

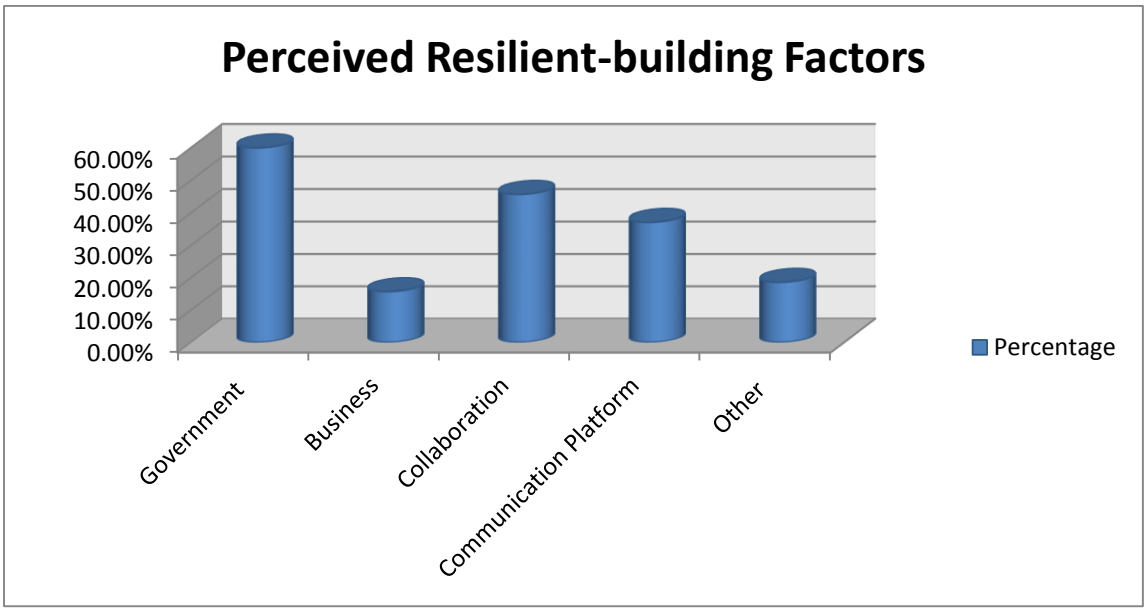


Figure 4.2. Perceived Resilient-building Factors

Civil society actors did perceive government support to be the most critical in their own capacity-building, particularly in preparing for catastrophic disasters. Interview data revealed that the activities of "support" from the government side can come in a variety of forms such as recognition and acceptance of the existence of the civil society actor, or provision of equipment and activity space. The second factor perceived to be critical was making connections and collaborating with other civil society actors. Communication platform building is also high on the list when it comes to preparedness and mitigation. Since all of these factors were related to the qualities of how civil society actors would hope to have or develop in the long term, I named them the factors for "social resilience". This concept is also developed further in terms of the actions put forth by the civil society

actors throughout the rest of the study. Here, I focus on the perception aspect of the picture. The perceived functions being named in the "others" category include: 1) the professionalization of NGO services; 2) the role of professionals and organizations for educating people to perform self-help immediately after a disaster; 3) risk awareness and risk management skills; 4) practicing drills for disaster mitigation and preparedness, educating the general public; 5) conceptual change; 6) societal support.

Overview of Network Structure Characteristics

Communication Network

The following three sets of network centralization[16] measures (see table 4.4) illustrate a consistent increase in information exchange activities comparing the pre-earthquake period, the emergency response period, and the recovery period.

[16] Please refer to the network concept glossary tables (1) and (2) in Appendix 4.3.

Table 4.4.[17] Comprehensive Communication Network Characteristic Measures Comparing Three Time Periods (138 actors)

	Pre-earthquake	**Emergency Response**	**Recovery**
Centralization **(cohesiveness)**	Network Centralization (Out-degree)=25.244% Network Centralization (In-degree) =6.862% Betweenness Centralization: 2.71%	Network centralization (out-degree)=94.518% Network Centralization (in-degree)= 21.727% Betweenness Centralization: 13.03%	Network Centralization (Out-degree)= 92.90% Network Centralization (In-degree) =18.642% Betweenness Centralization:15.14%
Sub-groups **(micro-structuration for information exchange and communication)**	4 cliques found Weak components: 63 Strong components:121 Largest Strong Component: 18 nodes	25 cliques found Weak components: 1 (actor 1 being isolate) Strong components: 91 Largest Strong Component: 48 nodes	47 cliques found Weak components: 1 (actor 1 being isolate) Strong components: 91 Largest Strong Component: 48 nodes
Network-level analysis **(Action)**	Number of ties=230 Density=0.0122 Reciprocity=0.0900 Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 31.37%	Number of ties=1028 Density =0.0544 Reciprocity=0.0925 Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 34.74%	Number of ties=1193 Density=0.0631 Reciprocity=0.1067 Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 37.97%

[17] Refer to Appendix 4.3 for definition of the network concepts

The out-degree network centralization increased from 25.244% to 94.518%. In-degree network centralization increased from 6.862% to 21.727%. The betweenness network centralization increased from 2.71% to 13.03%. This means that the whole communication network might have experienced a structural change with substantial amount of concentration in terms of out-degree during the emergency response period. That is, the positional advantages could be rather unequally distributed in the overall network. On the other hand, the networks showed significantly less concentration in terms of in-degree (prominence) when compared to out-degree centralization. The betweenness centralization also experienced a significant surge immediately after the earthquake. This means that a higher amount of connections could be made in the network with the aid of intermediary actors connecting others who otherwise never would have known each other. When comparing the measures across the two time periods from before to immediately after the earthquake, the power of civil society actor changed substantially in terms of their ability to initiate information exchange ties.

During the long term recovery stage, the measures of network centralization showed little variation with the emergency response period. This was represented by only a slight decrease in out-degree and betweenness centralization, and a slight increase in in-degree network centralization. In the long term, actors were getting to know each other

better and were not only able to recognize but also to stabilize their communication relationships with others.

Knowing how a social group or NGO is embedded in a network sub-structure is also important in understanding how certain traits or behaviors are developed. The communication and information exchange ties among the actors in a group can have a profound impact on the ways how these actors participate in the recovery process and perceive their future trajectories in terms of organizational development. At the most basic level, a clique is a sub-set of a network in which the actors are more closely and intensely tied to one another than they are to other members of the network. The increase in the number of cliques comparing before and after the earthquake represents a micro-restructuration process being triggered by the disaster. For example, there were 4 cliques before the earthquake and the number quickly increased to 25 during the emergency response stage, and to 47 during the recovery stage. This means that as the communication ties became increasingly weaved together, actors were also able to cultivate close and tight relationships with others.

I further examined the overall communication actions taken inside the civil society domain. The total number of ties increased from 230 before the earthquake to 1028 during the emergency response period, and to 1193 during the recovery stage.

Density, which provides an index of the degree of dyadic connection when all 138 actors were taken into consideration, showed consistent increase over the three periods of time from 0.0122 before the earthquake to 0.0544 in emergency response period, and further to 0.0631 in recovery stage. The percentage of pairs of connections that were being reciprocated also increased gradually, from the pre-earthquake period of 9% to emergency response period of 9.25%, and to 10.67% in the recovery period. This means that there was a gradual increase in cohesion and trust among actors over time. Transitivity displays a type of balance when actor A directs a tie to actor B, and B directs a tie to C, then A also directs a tie to C. The level of transitivity was at the 31.37% level before the earthquake. It increased to 34.74% in the emergency response period, and to 34.97% during the recovery period. At this stage of analysis, it can be concluded that there seemed to be an emerging pattern of institutionalization of the reconstructed social structure. Table 4.5 below shows a selected number of those actors that ranked relatively higher than the rest of the others in terms of their outreach ties and incoming ties over the three time periods.

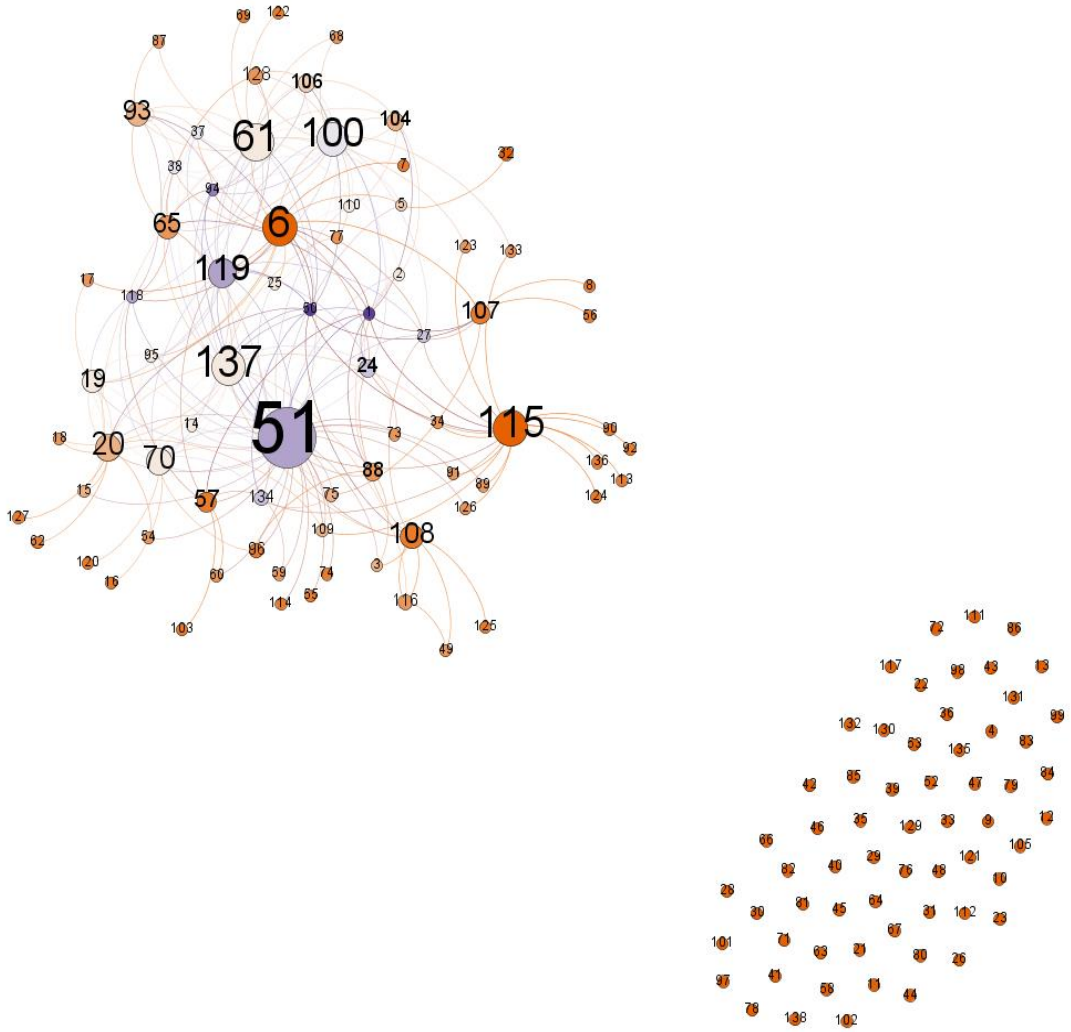
Table 4.5. Communication Network Three-Period Comparison of Local Centrality Measures (138 actors)

	Actors with highest in-degree (receiving ties)	Actors with highest out-degree (initiating ties)
Pre-earthquake	#50,#1,#94,#51,#119,#118	#51,#61,#115,#6,#137,#100
Emergency response	#3,#1,#49,#51,#2	#24,#34,#3,#32,#51,#6
Recovery	#3,#1,#49,#51,#27,#38,#24	#3,#32,#93

Notes: Numbers represent actor ID identification

In this study, actor #51, a Chinese non-profit incubator whose Chengdu branch was established after the earthquake, had consistently been a key player whom others tended to reach and contact for information. For both outreach and incoming nomination activities, changes can be observed when comparing before and after the earthquake. For example, domestic non-Sichuan-based civil society actors such as #94 and #50 lost their central positions in terms of the intensity of being reached out by others after the 2008 earthquake. Actors #49 and #3, both formed locally for the cause of earthquake response and recovery quickly emerged and gradually sustained to be the key players in information exchange and communication. Sichuan-based civil society actors, such as #32 and #93, also emerged to become more active in reaching out to others in the network. Figures 4.3(*A, B*), 4.4*(A, B)*, and 4.5*(A, B)* illustrate a visual representation of the changes of in-degree and out-degree centrality measures among actors over time. As

is shown in the circular layout graphs, each line connecting one actor to another represents an information exchange tie was being established. It can be concluded that right after the disaster, not only the communication network became further integrated by forces drawing in previously isolated actors, but the sheer availability of the number of information exchange channels in the network increased significantly, thus constructing denser communication neighborhoods surrounding each actor.



Size: Out-degree, Color: In-degree (darker blue with higher in-degree, orange with lower in-degree)

Figure 4.3*A*. Communication Network (Pre-Earthquake)[18]

[18] The cluster of actors on the bottom of the right hand side of the figure were those who did not have any communication ties with others. Thus, they are counted as isolates and not being included in the connected network.

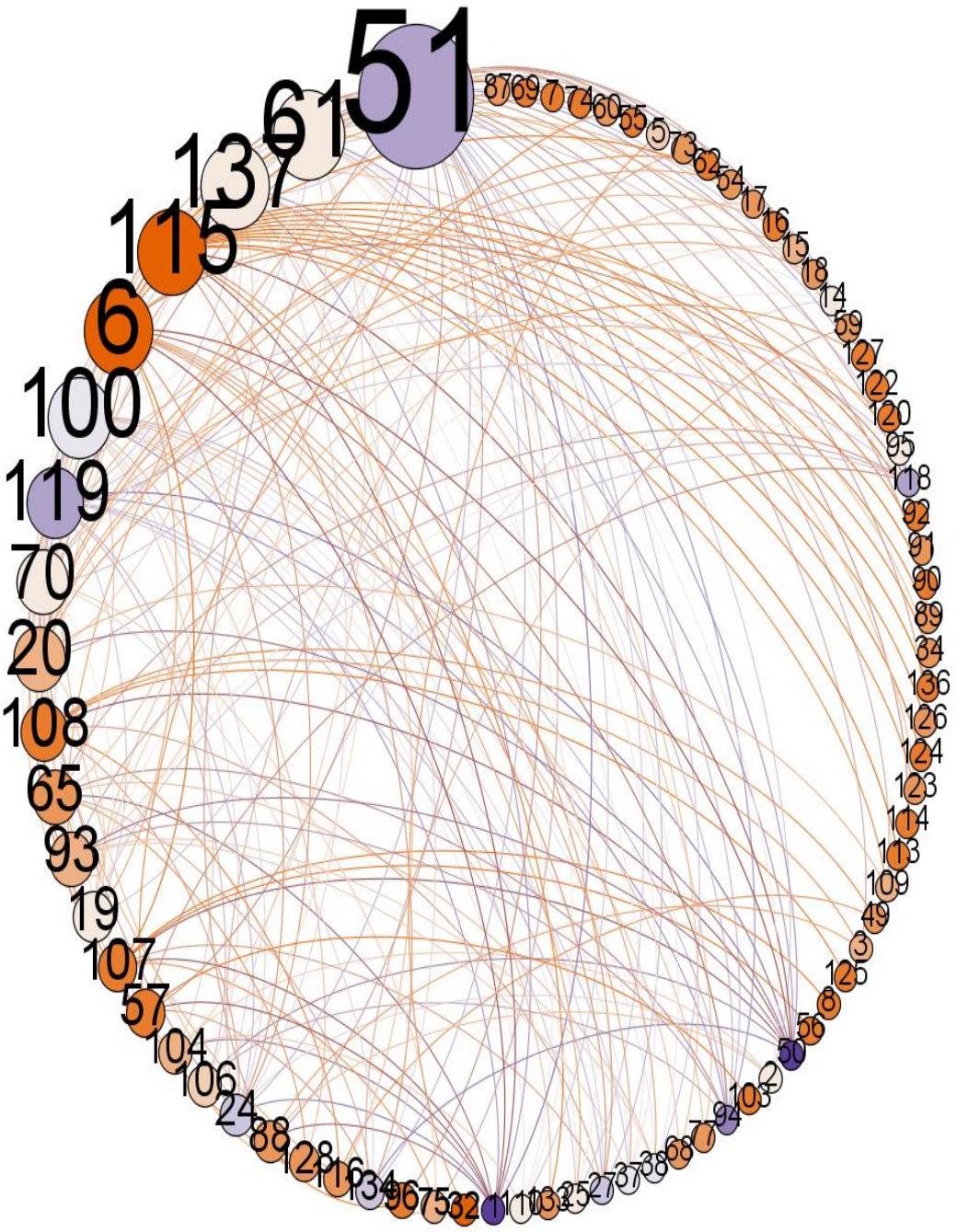


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Figure 4.3*B*. Communication Network-Pre-Earthquake (Circular Layout)

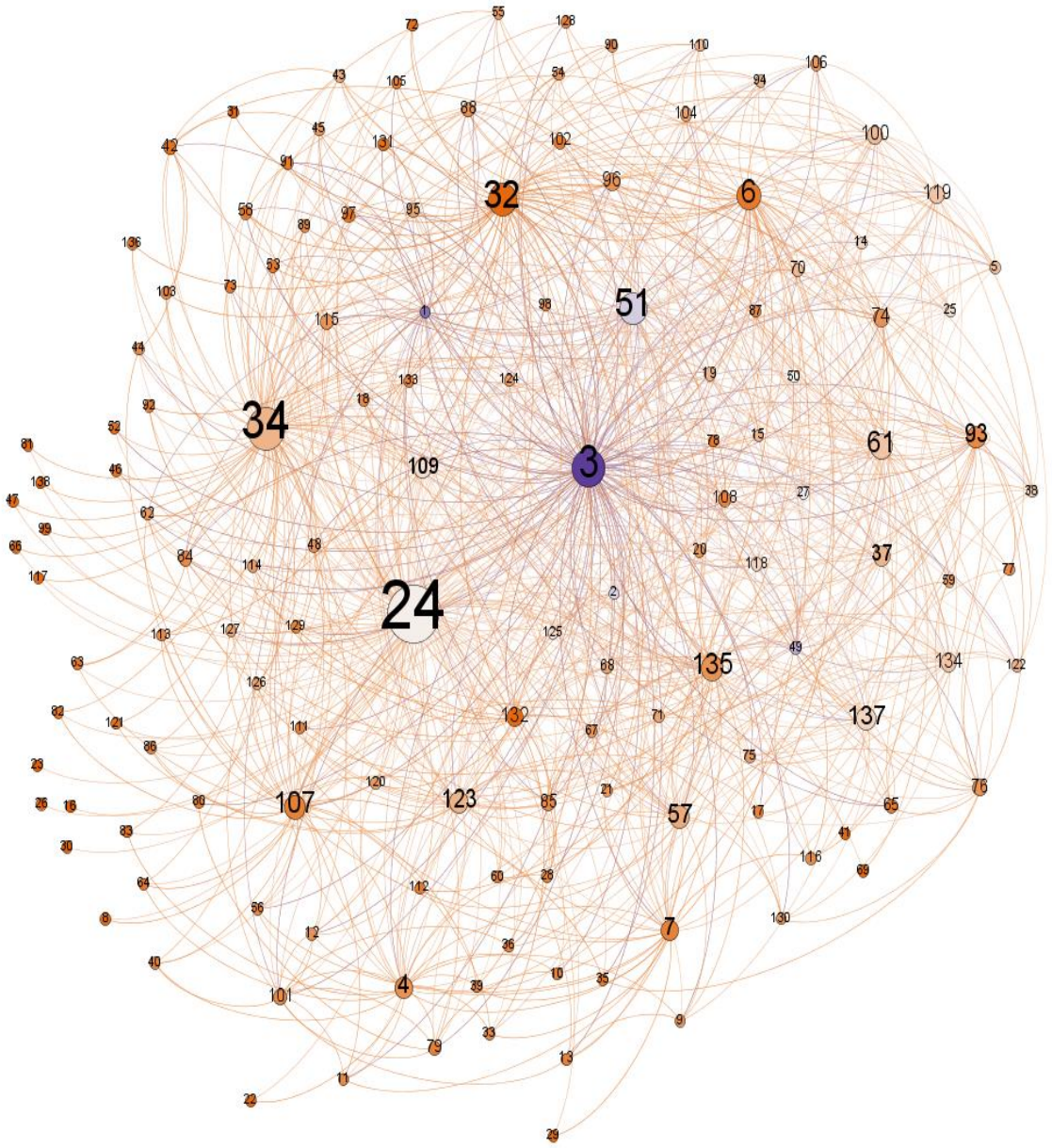

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Figure 4.4*A*. Communication Network (Emergency Response)

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Figure 4.4*B*. Communication Network-Emergency Response (Circular Layout)

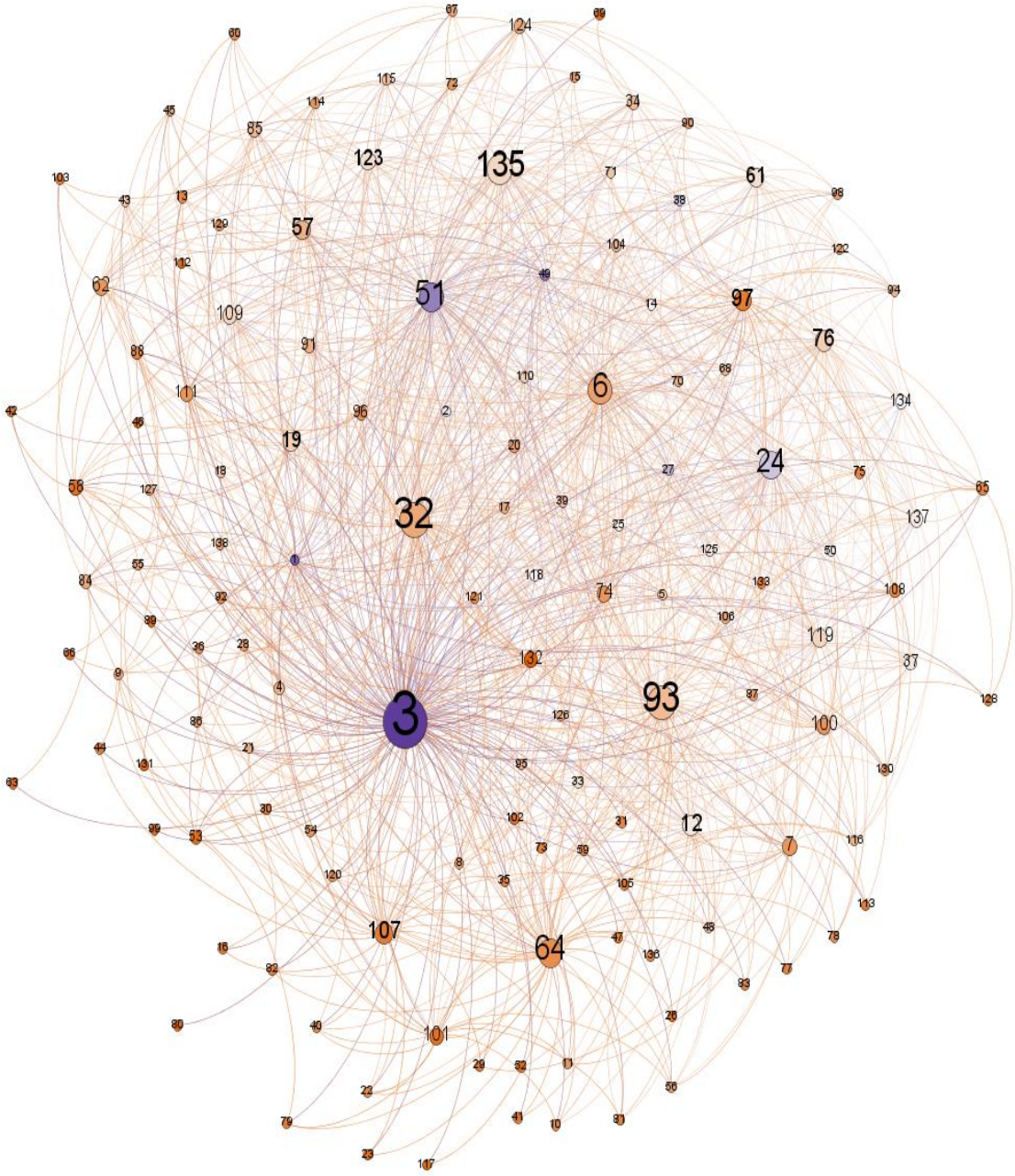

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Figure 4.5*A*. Communication Network - Recovery

Size: Out-degree, Color: In-degree (darker blue with higher in-degree, orange with lower in-degree

Figure 4.5*B*. Communication Network-Recovery (Circular Layout)

Collaboration Network

I now provide an overview of the structural changes in the project collaboration networks after the earthquake. Examining table 4.6 below, the betweenness centralization increased from 0.19% to 7.59%, which are at a lower level when comparing across all three time periods with those of the communication network. This means that although the percentage of intermediaries that the actors depended upon increased, the collaboration network as a whole tended to have less concentration on ties connected through intermediaries than the communication network. The collaborative network was also less clique-oriented as the number of cliques increased from 0 to 1 and maintained the same through the recovery period. This can be interpreted as a sign showing an embracing nature among actors in a collaboration network environment. They were less likely to seek out certain characteristics of other actors as the basis for establishing project collaborations for earthquake response and recovery activities. The out-degree centralization measure increased from 6.212% to 22.814%. Over time, the collaboration network is also becoming more centralized around a particular set of actors in terms of their actions in reaching out toward others.

Table 4.6. Comprehensive Collaboration Network Characteristic Measures Comparing Three Time Periods (138 actors)

	Pre-earthquake	**Emergency Response**	**Recovery**
Centralization **(cohesiveness)**	Network Centralization (Out-degree) =6.212% Network Centralization (In-degree) =6.948% Betweenness Centralization=0.19%	Network centralization (out-degree)=16.362% Network Centralization (in-degree)= 16.362% Betweenness Centralization=5.53%	Network Centralization (Out-degree)= 22.814% Network Centralization (In-degree) = 15.462% Betweenness Centralization=7.19%
Sub-groups **(micro-structuration for information exchange and communication)**	0 cliques found Weak components:92 Strong components: 134 Largest Strong Component: 3	1 clique found Weak components: 38 Strong components: 117 Largest Strong Component: 19	1 clique found Weak components: 39 Strong components: 111 Largest Strong Component: 30
Network level analysis **(Action)**	Number of ties=76 Density=0.004 Reciprocity=0.0556 Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 22.62%	Number of ties=241 Density =0.0127 Reciprocity=0.0856 Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 19.35%	Number of ties=272 Density=0.0114 Reciprocity=0.0924 Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 18.46%

As table 4.7 shows below, actor #1 and actor #2 maintained to be among the most "popular" project collaboration partners throughout the three time periods. It can be

recalled that actor #1 represents all the active local government agencies in the state domain while actor #2 represents the private enterprises inside the market domain.

Table 4.7. Collaboration Network Three-Period Comparison of Local Centrality Measures (138 actors)

	Actors with highest in-degree (receiving ties)	Actors with highest out-degree (initiating ties)
Pre-earthquake	#1,#2,#37,#100,#110	#137,#61,#100,#70,#93,#119, #104
Emergency response	#1,#2,#3,#49,#119,#51	#3,#24,#119,#135,#137
Recovery	#1,#2,#3,#51,#119	#3,#135,#119,#51,#24,#93,#134, #32

I interpret this type of network behavior as perceived "preferences" (from the perspective of tie initiating actors) for reaching out to the government and the private sector for collaborations both before and after the earthquake. Whether this "preference" emerged out of a motive considering the institutional necessity of the social groups and NGOs in order to survive and sustain over time or out of altruistic factors to better serve the local communities will be dealt with in another section. For now, I continue examining the characteristics of those actors who were "prominent" or "popular" (high in-degree) and "active" (high out-degree) in the collaboration network environment.

Before the earthquake, actors #37 and #100 were being reached by many others, immediately following actors #1 and #2. Both of the former two actors were registered Sichuan-based NGOs. Actor #110 was the only international NGO that was being nominated by many others within the in the network. However, this actor's place was replaced by other local grass-roots groups after the earthquake. Actors #3, #49, #51, #119 became the key collaboration partners being named by other actors in the network. The first two were grassroots Sichuan-based actors. During the emergency response period, both #3 and #49 participated in being the hubs for information coordination among groups and organizations that came into the area. While actor #3 maintained its specialization in coordinating activities among actors through the recovery period, actor #49 focused more on community social recovery in different locations in Sichuan province. Actor #119 was part of an extension program of an NGO based in Hong Kong. It had been active in terms of initiating collaboration ties since the pre-earthquake stage and attracted attention from more civil society actors especially right after the earthquake. Figures 4.6(*A, B*), 4.7(*A, B*), and 4.8(*A, B*) illustrate a graphical representation of the changes of the in-degree and out-degree centrality measures for the collaboration networks. In general, compared to the communication structure before the disaster, collaboration activities were more dis-integrated with a larger number of isolated actors

and one completely separated sub-structure being self-sufficient on the periphery. Immediately after the disaster event, the circular layout shown by Figure 4.7*B* illustrated that despite of the existence of isolated actions, there was an expansion of ties with more actors collaborating with each other. Such increase in network density continued through the long term recovery stage as shown in figure 4.8*B*.

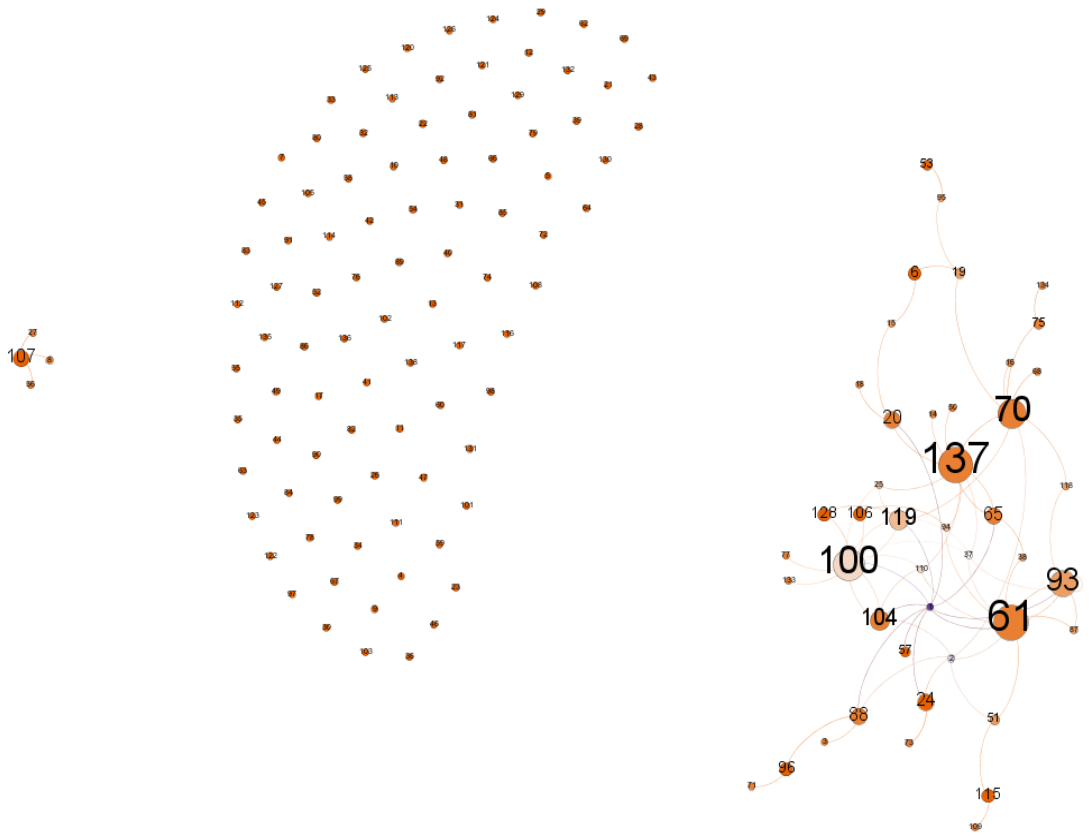

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Figure 4.6*A*. Collaboration Network (Pre-Earthquake)

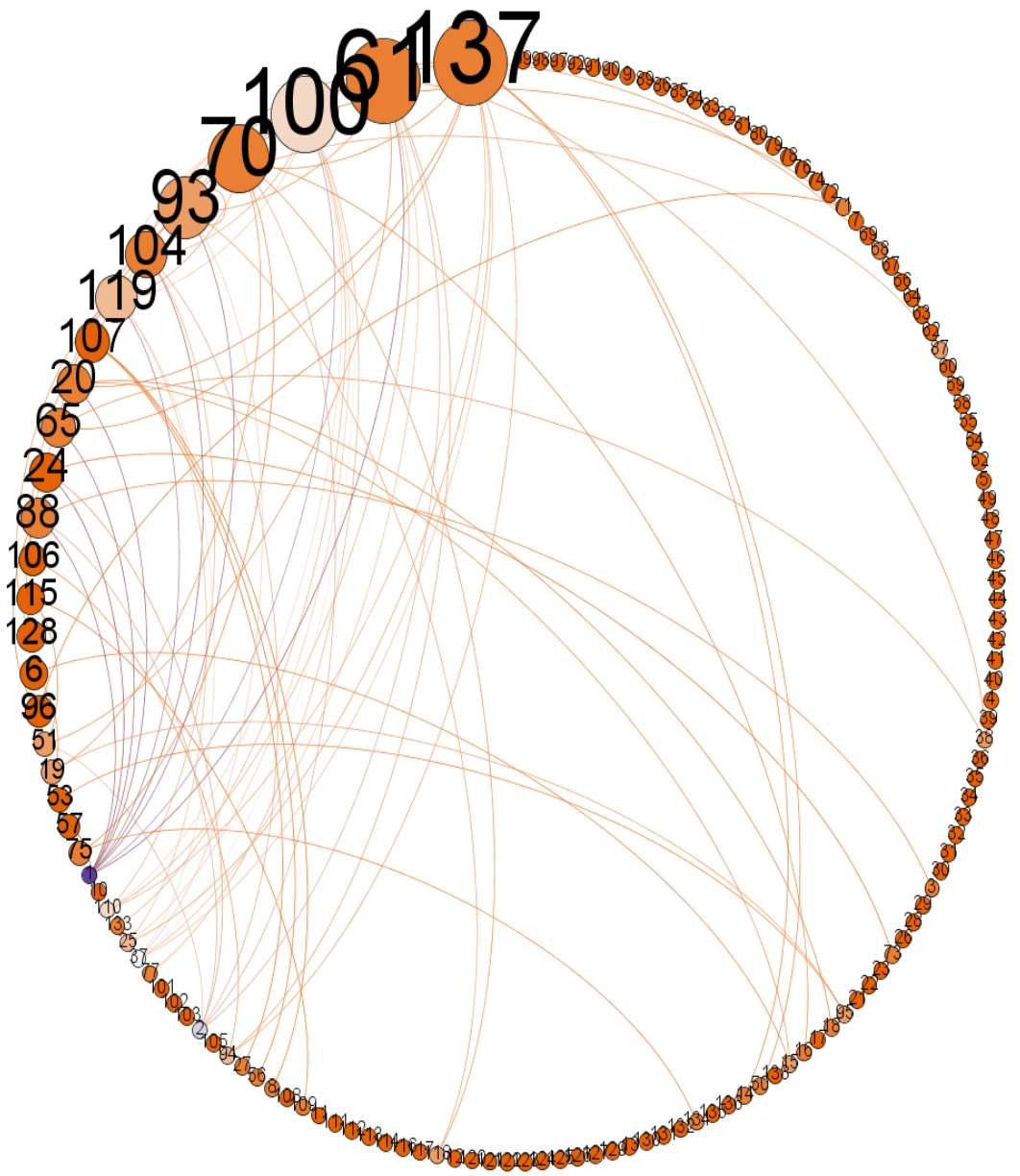

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Figure 4.6*B*. Collaboration Network-Pre-Earthquake (Circular Layout)

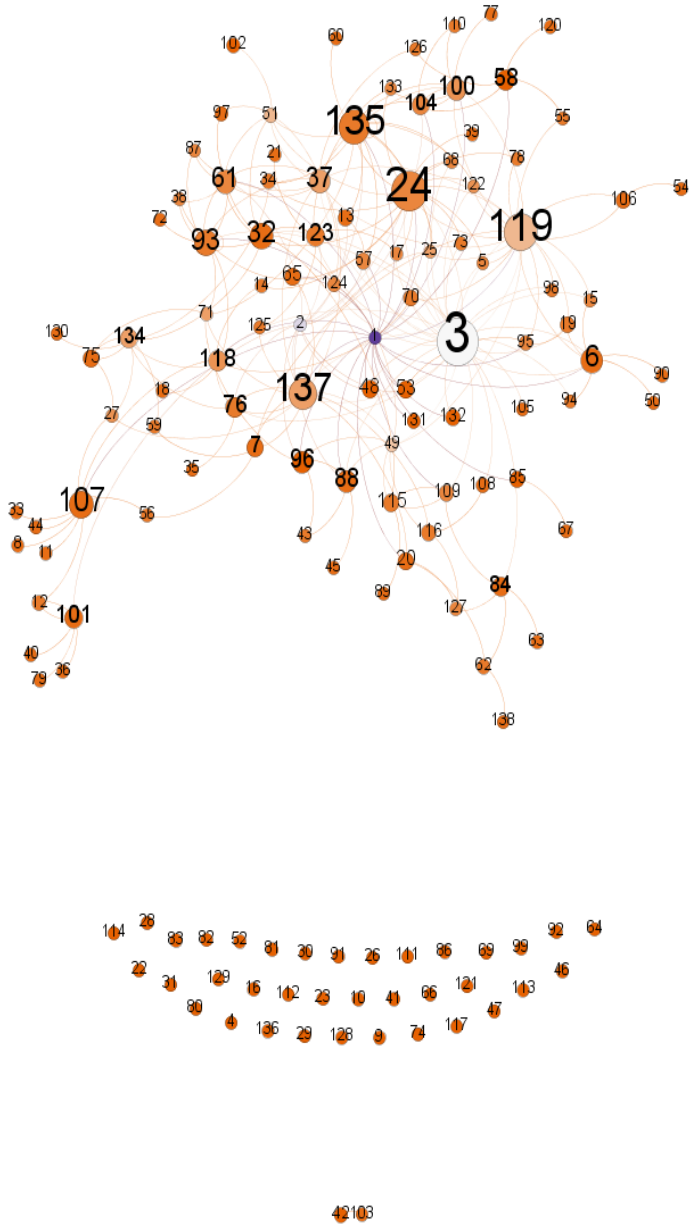

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Figure 4.7*A*. Collaboration Network (Emergency Response)

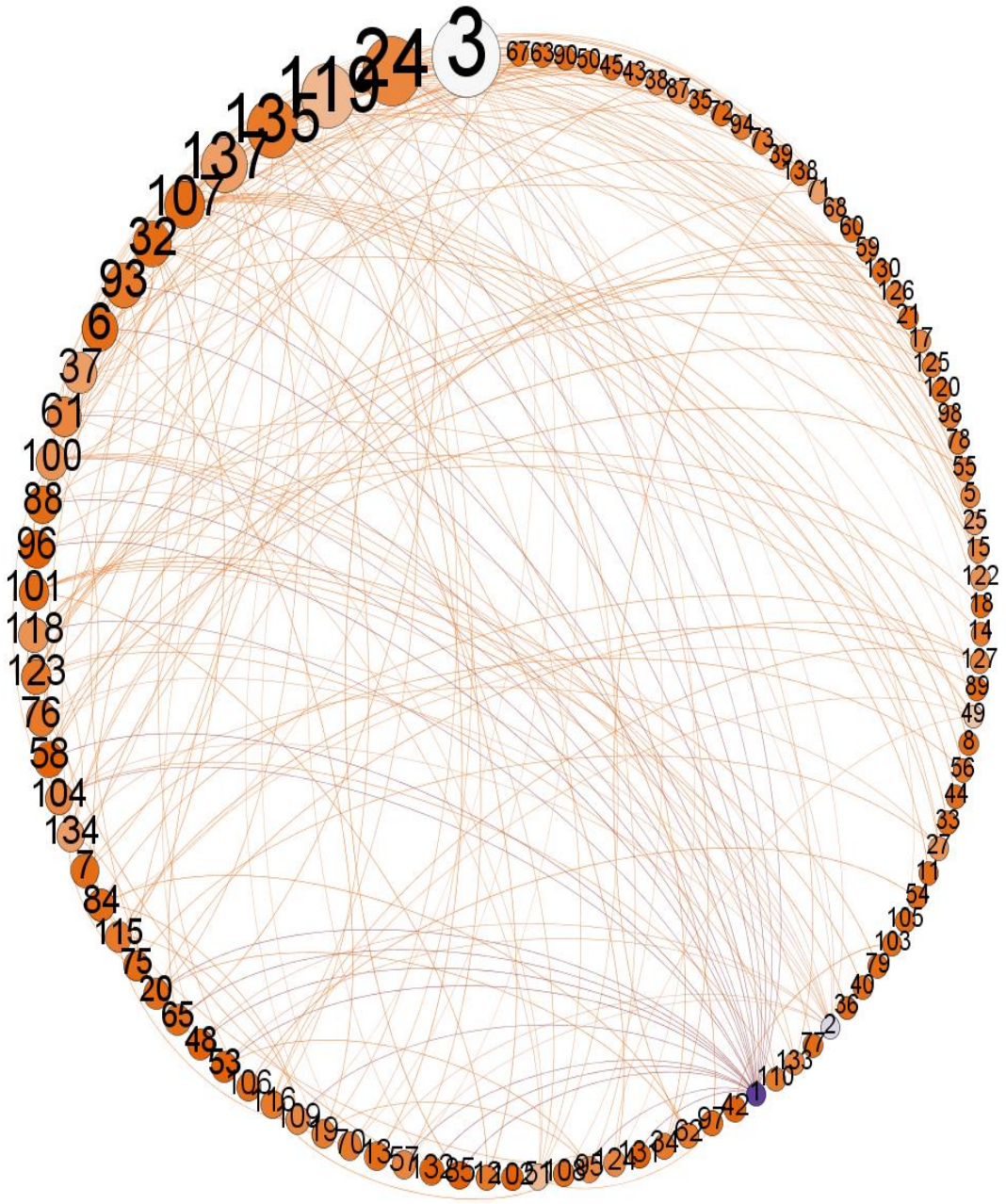

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Figure 4.7*B*. Collaboration Network-Emergency Response (Circular Layout)

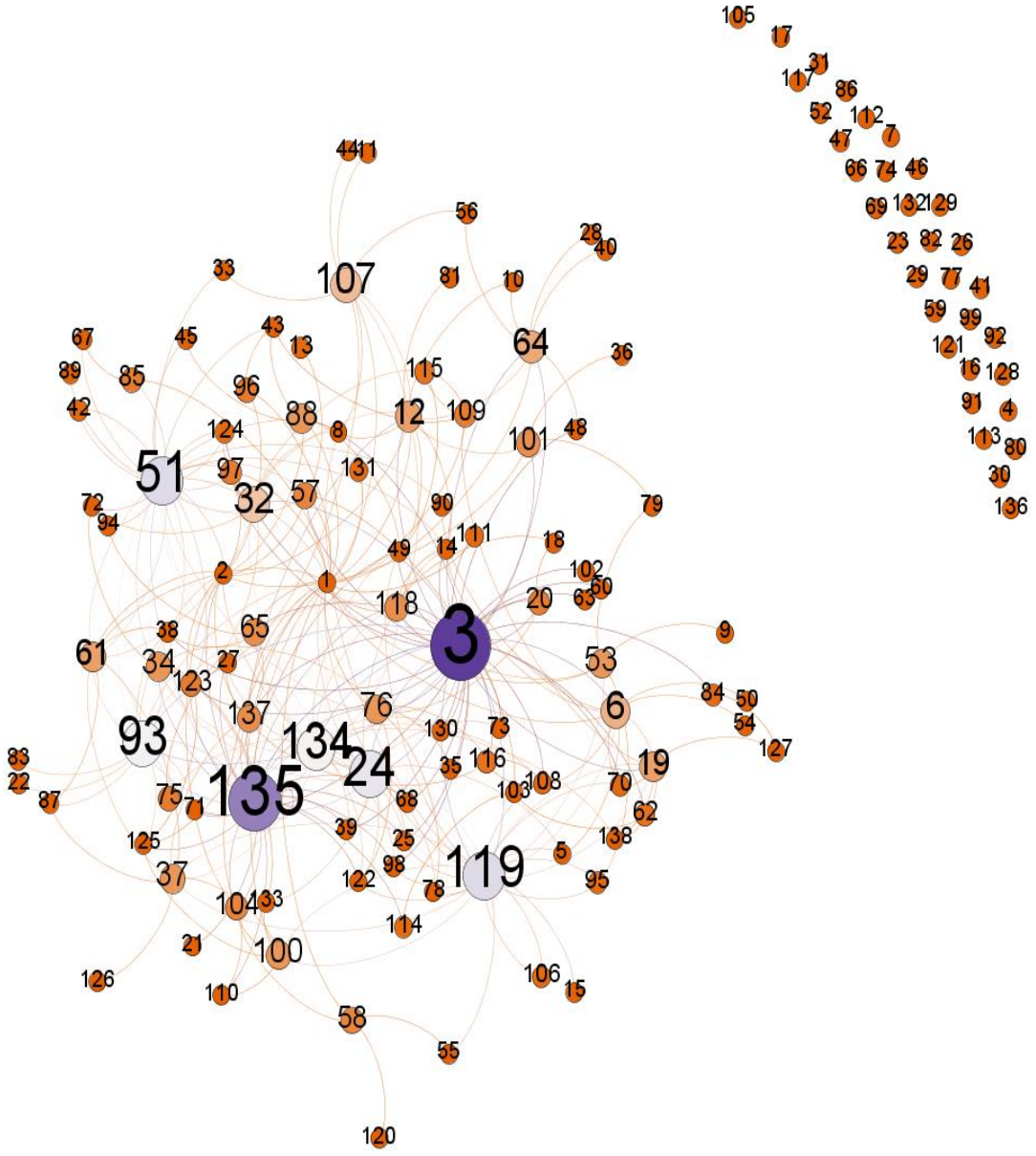

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Figure 4.8*A*. Collaboration Network - Recovery

Size: Out-degree, Color: In-degree (darker blue with higher in-degree, orange with lower in-degree

Figure 4.8*B*. Collaboration Network-Recovery (Circular Layout)

Agency Freedom Initiation and Capability Formation

Initiation of Agency Action (Out-degree)

In this section, I provide a more detailed account of the social structuration processes within which civil society actions emerged throughout three time points: before the Wenchuan earthquake (t1), shortly after the event (t2), and during the long-term recovery period (t3). Two types of institutional environments are investigated specifically and they are: communication and collaboration. An important feature of this level of analysis is that it allows for an in-depth understanding of the duality nature of action and structure. On the one hand, actors are part of the social structure and their actions are dependent on whom they are connected with, the types of connections, and the depth of connectedness. In other words, actors' constraints and opportunities in terms of building relationships arise from the way they are positioned inside the network structures. On the other hand, the structuration processes of the two types of network environments are in turn constructed by or grounded in the actions among actors. In the context of this research, actors not only made decisions based on how they were connected in the structure, the way each actor formulated its own connection decisions toward others over time was also consequential to how the structure as a whole was integrated.

I utilized network descriptive statistics generated by the UCINET network analysis program to examine the general features of the communication and collaboration environments. I maintained all 138 actors in the original dataset even though only a subset of them actually responded to the survey. This was made possible for the following reason. From a network methods point of view, one important nature of the network data is that when a tie is being nominated by one actor towards the other, the reported existence of such a connection can be counted as in existence even if one party did not respond to the survey. In other words, the 63 respondents did not just report interactions among themselves, they also reported their connections across all other actors in the original roster list containing 138 actors. This allows the network analysis to capture a larger set of connections. In fact, some network studies revealed that for highly competent informants, a whole network can indeed be measured by a small number of respondents (Marsden 2005).

Applying this to the current research context, examining the complete network actor list will provide a comprehensive picture of depicting the changes of outgoing and incoming ties. For example, at one point of time, one could observe that actor A reached out to certain number of remaining others in the network, and over the subsequent times, the out-going ties for this actor stayed the same in terms of sum of ties. If this is observed

in a network composed only of those actors at the core rather than retrieving the complete list, one can easily come to a conclusion that actor A has behaved consistently throughout all of the three time periods. But a closer look at the original roster data can reveal that actor A actually developed more ties over the long term and some of the ties were not being counted for because they were cut out from the core list of actors. Therefore, in the current section of the study, where the nature of the network formation is one key aspect of exploration, I maintained the use of the original 138 actors.

I start out by looking at the "big picture", which is how actors were connected in general. The type of structural environment that I am looking at first is the "communication" network. I defined this context in terms of general information sharing and communication exchange as the result of proactive coping behavior on the actors' side. Such a willingness to get engaged with others in the network implies that the network ties are of a "directed" nature. This means that actors have the opportunity to be both initiators of reaching out to others and receivers of being contacted by others and being perceived as possible credible sources of information. The former mechanism is measured by "out-degree" in network descriptive measures, calculating the sum of connections from the actor of interest to others. The latter is measured by "in-degree", calculating the sum of ties that others have reached to the particular actor of interest. In

the following discussions, I illustrate both out-degree and in-degree measures for communication networks. For those actors with comparatively higher level of degree measures for each time point, I further expand the examination to trace the motivations and origins of their actions.

The examination of the communication network is critical at this point because information exchange after a catastrophic disaster often represents primary actions taken in response to the crisis event and building a robust information infrastructure contributes significantly to the "resilience of communities exposed to recurring risk" (Comfort and Haase 2006, 328). Deciphering its patterns of changes can be informative in tracing the emergence of the more institutionalized project collaboration relationships.

Pre-Earthquake Actions

Table 4.8 shows the summary of results illustrating three categories of the actors with relatively higher ranking of their outreach activities. I adopted a cut-off point restricting to those with outgoing ties greater than 10. The intensities for tie-initiating action are shown inside each of the parenthesis in a corresponding order with each one of the actors listed in the "Civil Society Actor" column.

Table 4.8. Ranking of Initiation of Communication Agency Action Intensity (Pre-earthquake)

	Civil Society Actor	Tie-Initiating Action Intensity
Category 1	#51	(36)
Category 2	#61, #6, #137, #115	(19), (18), (18), (18)
Category 3	#100, #119, #20, #70	(16), (13), (11), (11)

The Case of Actor #51 (NGO51-01)

In the first category, the findings showed that before the earthquake event, actor #51 had the highest action intensity in terms of outreach activities as it sent ties to 36 out of 137 possible others. After normalizing this information by expressing it as a proportion of the number of those in the connected network, it is apparent that this actor reached out to 26.3% of all the remaining actors in the communication network. In fact, this actor was the only one among those listed in the three categories that reached out to over 25% of the remaining others. All other actors in the second and third categories in table 4.8 remained at a level lower than 15% during this period before the earthquake. Actor #51's high degree of connection in reaching out to others can be traced back to the types of activities it had been involved in as an "incubator" for philanthropy-oriented start-ups and smaller social groups and organizations in China. As was first established in Shanghai in

2006 with the goal of supporting social innovation in the non-profit sector in China, the organization developed into a "support aggregate" that assists the growth of various grass-root groups in the country. The kind of supports can be in terms of skills and training for capacity-building, provision of space and equipment for operation, microfinances as subsidy, and thus help in their institutional registration process. The organization itself was first registered as a NGO development support center specifically focusing on developing more domestic non-profits whose visions are driven by the need for innovative problem-solving techniques for society's emerging problems and needs. With this understanding of the actor #51 in mind, it makes sense that this actor tended to initiate more connections compared to others even before the 2008 earthquake. In other words, this actor can be thought of "influential" in the sense that it not only initiated communication ties to others with the intention of information exchange, most importantly, the nature of such ties originated from the actor's intention in purposefully developing and sustaining the functioning capacity of others in the network. Continuing looking at the emergency response period, the actor's communication connections increased to 58 ties which counted 42.3% of the remaining actors. During the recovery period, this figure further climbed up to 62 ties representing 45.2% of the network, thus showing an increasing trend in the actor's outreach activity. Indeed, actor #51 (NGO51)

established its field offices across different regions of the country and the one in Sichuan was another expansion initiative for the actor to engage in the disaster recovery process after the earthquake. Therefore, the sources of the expansion activities as an organization became important to trace qualitatively. I paid specific attention to the interview accounts of the head program officer (NGO51-01) working for the organization's Chengdu field office.

Sources of ORGANIZATIONAL action and motivation (Actor #51)

The actions being conducted by actor NGO51 was not completely new based on its practicing history in China. Before the earthquake, it had field offices across Beijing, Shanghai, and Shenzhen. The Chengdu field office in Sichuan Province first emerged primarily due to the 2008 earthquake event. And according to the program officer (NGO51-01), the Chengdu branch was already a registered formal nonprofit organization at the time of the interview. With its specific practicing focus in being an "incubator" of small or newly emerged civil society groups and organizations, the actor engaged in projects that particularly aimed to develop civil society awareness and engagement during the early phases of disaster recovery until year 2009. Those social groups and

organizations that were in their emerging or start-up phase of development were being paid special attention. Since 2009, there was a gradual shift in the actor's recovery-related activities towards providing local community services, while in collaboration with actors not only from the civil society domain but also with those inside the state and market domains.

From the account of the program officer, sixteen earthquake-impacted local communities were selected to establish projects for community service provision. Three determining factors were in play for this actor to make the selections. One is that the majority of the sites chosen were located in the areas that were significantly damaged by the earthquake. The second factor was to see if there were sufficient local resources to implement the projects, especially if there were enough physical spaces available. "At times, we had to negotiate with the local governments to see if they would be willing to approve us with a site for us to implement our community service programs" (NGO51-01). The third selection criterion was based on the local circumstances of the re-settlement areas, such as the differences in population coverage across locations[19].

[19] For further detail in Chinese, refer to Appendix 4.CaseNGO51.1.

Among these sixteen selected locations, the community service centers were further divided into three groups based on the size of the community centers (three large, three medium, and ten small ones). The operating mechanisms for each category were as follows. First, for the ten smaller centers, the services were being implemented by its collaborating civil society partners, called "third party social organizations" (*第三方的社会组织*). The role of actor NGO51 was to provide some funding and technical supports. Or it would step in to provide necessary assistance only when problems or difficulties were encountered during the program implementation stage. As for the medium sized centers, while the third-party actors were also being introduced, more assistance would be provided, as compared to the functioning of the smaller centers, in the form of assigning extra staff to help carrying out the field activities.

Aside from the action side of the picture, the concerns to better serving the needs of the disaster-hit local communities became the primary motivation for actor #51 to participate in these different projects. As described clearly by the organization's program officer:

> This would depend on the number of people we are servicing and the available space. So if the servicing space turns out to be very big, like one to two thousand square meters, then, the services being provided would consist of more varieties. The activity areas covered by only one or two civil society groups/organizations would be limited, especially when the needs in the disaster areas varies a lot.

> These one or two groups/organizations would not provide all of the needed services in the area. In these cases, we need to coordinate many other groups/organizations to come to a specific location to conduct activities. Our ability to coordinate and facilitate would be critical at these circumstances. So what we need is to play the role to build some kind of platform. (NGO51-01-01[20])

Note first that the informant recognized the diverse social needs within local communities during the recovery stage of disaster. This represents the cultural sensitivity being implemented through the actor's field practices. Second, there was also an awareness of the importance in building connections with other civil society actors for sustaining a collaborative effort in providing the needed services for communities. Third, the role being perceived by the actor itself was essentially a relational one in terms of performing its task as a platform for facilitation and coordination.

In order to illustrate how a particular project was being carried out in the field, the program officer provided an example of a project implemented in one of the areas suffered significant damages after the earthquake. Upon carrying out the project at that location, three social service organizations (*社会组织*) were introduced into the community. During the "early intervention" phase, typically some preliminary research would be conducted and information be gathered regarding the needs of the community. Then, based on the different kinds of needs, actor NGO51 will select those social

[20] For Chinese script, Please see Appendix 4.4.01*A*.

organizations with matching specializations. Thirdly, the written details of how to carry out the activities will be implemented through a collaborating effort with locally established partnering organizations. “This is because they are more familiar and knowledgeable with the local conditions and environment than we do and thus can operate in an effective way that is culturally sensitive”.

In general, the actions of NGO51 were consistent with its primary purposes in assisting the growth of other civil society actors both before and after the earthquake. But the emergence of many smaller grassroots actors provided valuable opportunities for NGO51 to expand its communication connections toward supporting more of its civil society counterparts. This explained why the actor was able to establish an increasing number of communication ties throughout the emergency and recovery periods after the earthquake. Taking the initiative to become an “incubator” to develop other civil society actors that were at the start up stage became the primary source of motivation for NGO51 soon after the earthquake. The persistence of organizational action beyond the emergency response stage clearly arose out of the actor’s awareness of the co-dependent and co-evolutionary nature of its relationship with others (see figs. 4.8.1*A*, 4.8.1*B*). This thus led to the actor initiating field collaboration projects specifically drawing in others with significant amount of local knowledge.

Figure 4.8.1*A*. Banner Placed Outside Actor #51 Chengdu Field Office Showing Civil Society Groups and Organizations in its "Incubation" Program

(*Source:* photo taken by Jia Lu, 2011)

Figure 4.8.1*B*. Banner Placed Outside Actor #51 Chengdu Field Office Showing Civil Society Groups and Organizations Completed its "Incubation" Program in Shanghai, Beijing, and Chengdu

(*Source*: photo taken by Jia Lu, 2011)

Continuing examining the results shown in Table 4.8, I now focus on the actors inside the second category. Actors #61, #6, #137, #115 exemplified relatively similar behaviors in being the active initiator of communication ties as compared to actor #51. Before the earthquake, actors #6, #137 and #115 reached out to 13.1% of all the remaining others while actor #61 reached out to 13.9% of others in the network.

Actor #137 is a Beijing-based non-profit organization registered under the business category and it was first established in April, 1994. The primary focus of practice established by this organization has been in the area of environmental protection and community problem-solving related to the sustainability challenge as a result of China's rapid urbanization process. Its primary goal was to construct a platform for citizen participation regarding environmental protection issues and motivating voluntary behavioral change. Immediately after the earthquake, the communication ties for this actor almost doubled, climbing up to 37 (27%), indicating increasing emergency response effort through the establishment of information sharing ties with others. According to the organization's online memorandum, in July 2008, just two months after the earthquake, the actor initiated a seminar event inviting participants from the planning, construction, and education departments of the central government and local government, foundations, and other donors to discuss the issue of incorporating green technologies and concepts into the construction of schools in the impacted areas. Such an effort had been carried out through the long term recovery phase when the actor reported participation in areas of housing reconstruction and environmental protection. However, there was a decrease in the actor's initiation in reaching out to the others from the emergency response period to the long term recovery period. A close observation of the particular connection changes

revealed that all of the 26 (19%) communication ties maintained in recovery period were part of the actor's connection network in the emergency response period. What this means is that for this actor #137, its efforts in initiating ties were concentrated during the period immediately after the earthquake. And it was able to maintain the already established information exchange channels through the longer term. No new ties were being built into the recovery period. This could be the case that the actor's focus over the long term was in maintaining certain types of relationship that tend to enhance its ability to conduct works in combining housing reconstruction and green technologies in particular.

Actor #6 is a non-registered international NGO with areas of expertise in providing educational opportunities for the disadvantaged and vulnerable individuals across various developing countries. Right after the earthquake, the organization directly participated in the emergency response activities through the establishment of an educational system support project in the Chengdu region. From the organization's annual report in year 2008, it is apparent that the activities of the project included setting up temporary classes in tents for the continuity of the affected children's education. At the same time, the organization has been active in reaching out to others and the number of actors that it named as communication partners increased from 18 (13.1%) of pre-

earthquake period to 45 (32.8%) during the emergency recovery period. And during the long-term recovery period, such ties reached to 58, resulting in its communication ties with 42.3% of the remaining actors in the network.

Actor #61 originally entered China as an international NGO focusing on poverty reduction and community development initiatives in rural areas of the country (see figures 4.8.2*A* and 4.8.2*B*).

Figure 4.8.2*A*. The birds-eye view of the newly reconstructed post-earthquake housing of YP village (located in the mountain regions of Sichuan Province), the primary location where one of the rural recovery programs managed by Actor #61 was implemented.

(*Source*: photo taken by Jia Lu, 2011)

Figure 4.8.2*B*. Another birds-eye view of the YP village

(*Source*: photo taken by Jia Lu, 2011)

Before the earthquake, its connections extended to 19 other actors. This was 13.9% of the remaining actors in the network, which ranked the top of all others in this category. During the emergency response period, the organization actively participated in the immediate relief by gathering both material and financial support for some of the most significantly earthquake-damaged provinces. In November 2008, the organization was successfully registered under the ministry of civil affairs in Sichuan province and was able to continue its rural development and poverty relief initiatives in the earthquake-

impacted areas. A seven-year special disaster recovery project was also established with the particular long term goals for community sustainable development and environmental protection. During the emergency response period, its out-going ties increased from 19 to 37. This was an increase from reaching out to 13.9% of the remaining actors in the network to 27%. However, like actor #137, such extensiveness decreased to 26 (19%) during the recovery stage. Again, the stabilization of the 26 ties into this last period did not come from this actor's effort in building new ties in the network. Rather, it originated from the initial surge in communication tie construction immediately after the earthquake.

Actor #115 is also based in Sichuan Province and it is an association that specializes in community elderly care and nursing. It started out with extending its communication ties to 18 others, accounting for 13.1% of the remaining actors in the network. But after the earthquake, its breadth of relationships began to wane, sending a decreasing number of ties to 6.6% of the remaining actors during the emergency response period and 2.9% during the recovery period. Compared to the relationship patterns of actors #137 and #61 mentioned earlier, this organization is the only one that experienced consistent decline in the number of communication partners including the period immediately after the earthquake. However, a closer examination of the particular ties being built and terminated over time shows that #115 actually did actively established

two new connections with groups that were non-existent before the earthquake event. One is the tie with actor #3 and the other is actor # 49, both of which came into being only after the disaster and became central players in the network over time, as will be shown in the earlier analysis. Actor #115 also built a new communication connection to private enterprises during the recovery period. Therefore, in the case of looking at actors with decreasing number of connections, an observation of the number of tie pattern changes longitudinally will only provide a general picture of the extensiveness of connections, but not considering the in-depth quality of the ties. By quality, I mean one needs to take into account to whom this focal actor is connected and the characteristics of these other actors.

In the third category, actors #100, #119, #20, and #70 have slightly lower level of out-degree as compared to those in the second category. Both #100 and #119 reached to consistently increasing number of other actors in the network since the earthquake. Actor #100 reached out to 16 others before the earthquake, which accounts to 11.7% of the remaining actors in the network. This number increased to 13.1% and 14.6% respectively for the emergency response period and the recovery period. Actor #119 started out by making connections to 13 others which accounts towards 9.5% of remaining others. The intensity of such activities increased to 13.1% and 17.5% during the consecutive periods

after the earthquake. Actor #100 is a Sichuan-based NGO focusing on participatory-based community development and poverty reduction. First established in 2003 and registered in the business category, the organization participated in activities such as taking care of women and children and livelihood development for local communities. It was also involved in community infrastructure reconstruction and community funds during the earthquake recovery period.

Actor #119, however, is a non-registered Hong Kong-based NGO. It was first established in 2004 and has been developing a variety of community partnership projects with mainland social groups and NGOs over the years. After the earthquake, the organization further expanded its works in the areas of community arts and social recovery. Throughout the three time periods, the communication partners of #119 has increased from 13 ties before the disaster event, to 18 in the emergency response period, and to 24 during the recovery stage.

Actor #70 is a Beijing-based rural construction center registered in 2004. The organization is a sub-division of the Rural Construction Center established at a university in Beijing. It focuses its work in policy implementation related to rural development. It had connections with 13 communication partners before the earthquake, which was

comparable to the level of actor #119 in the same period. But rather than continuing to expand its communication ties over time like the case of #119, actor #70 did not sustain any of the ties established before the earthquake and during the emergency response period. Right after the earthquake, the organization only had 4 ties remaining in its network. While it could be interpreted as a decreasing activity effort in building up connections at the aggregate level, a closer look at the nature of these 4 ties revealed that they were all newly established communication channels with those actors that had not have relationships with it before the earthquake. The disaster event triggered a type of relationship-building agency action for this actor to initiate contacts with the government branches, and other central actors in the Sichuan Province. However, none of these new ties made it over time into the recovery stage. One possible explanation could be due to the geographic location of the organization as being far from Sichuan Province. The other reason could be due to its purpose of establishment in participating solely for the emergency response period without the intention to stay active into the long term locally.

Actor #20 is another Beijing-based registered NGO first established in 2002. As an organization engaged in community service and capacity building in urban communities, the actor has been dedicated to provide tools to engage citizens to participate in the governance processes for community problem-solving. The majority of

its activities are currently located in Beijing and none in Sichuan Province. Before the earthquake, the actor had communication connections with 11 other actors in the network and some of which included actor #51 and #137. However, none of these ties persisted right after the earthquake. During the emergency response period, the only partner that it reached out to was actor #49, a Sichuan-based NGO that was formed and established initially for the purpose of earthquake response and recovery. This particular relationship was maintained through the longer term recovery period. For this actor #20, the earthquake event seemed to be a turning point for opening up an increasing number of communication partners in the Sichuan Province over the long run. This can be seen from its ties expanding from only one with actor #49 during the emergency response period to a total of five during the recovery stage. And all of these other five partners were either Sichuan-based grass-roots NGOs or formal earthquake-recovery oriented NGOs with field offices established in Sichuan. When one only looks at the changes of the number of ties, it is easy to come to a conclusion that actor #20 was not able to build consistent connections over time. But a closer examination of the characteristics of this actor tells us a different story. First of all, it is a non-Sichuan based organization. For such an entity to participate in the response and recovery of the earthquake that happened in Sichuan, it became necessary to get out of its "comfort zone" location-wise and start establishing

brand new ties with actors whose activities were grounded in the local culture and were able to gather first-hand information on a timely basis. It might be a rather difficult task for actor #20 initially especially when it did not have a field office that could have facilitated the communication flow from its partners in Sichuan to those working at the agency headquarter in Beijing. This location factor might partially explain the fact that it took the organization all the way into the recovery stage in order to establish communication connections with the local Sichuan-based NGOs. Secondly, the earthquake event, however, did prompt this organization to actively build up, particularly to those operating at a different location. The relationships that formed at this later stage of recovery period could be the foundation of a platform for a multi-regional communication network for the longer term stretching further beyond the 2 to 5 years of the recovery stage examined in this study.

The first conclusion that can be reached by examining the nature of these actors with higher level of outreach activities before the earthquake is the fact that they are all formal institutions that had established themselves and practiced as non-profit organizations in the civil society domain long before the 2008 earthquake event. Secondly, actors #3 and #49, both established only after the disaster, were found to be critical communication partners to connect. Their characteristics will be further discussed

in the later section. As a third conclusion for this section of examining the out-degree activities for the period before the earthquake, I summarize the characteristics of the key actors in table 4.9 below.

Table 4.9. Traits of Key Actors with High Tie-initiation Action (Pre-Earthquake)

Attributes / Actor	Registered	Establishment (Sichuan Branch)	Location
#51	Yes	After the EQ	Chengdu
#61	Yes	After the EQ	Chengdu
#6	No	None	Non-Sichuan based
#137	Yes	None	Beijing
#115	Yes	After EQ	Chengdu
#100	Yes	Before EQ	Chengdu
#119	No	Before EQ	Chengdu
#20	Yes	None	Beijing
#70	Yes	None	Beijing

As we can see, there were two un-registered foreign entities—#6 and #119—but were able to establish relatively high level of communication relationships before the earthquake. Both of them were formally established international NGOs originally operating outside mainland China and have started their work in the country before the 2008 earthquake. Since the 2008 earthquake, both organizations were able to sustain and

expand their communication networks, particularly with domestic grass-roots groups and organizations. Similarly, domestic grass-roots organizations, such as actor #51 and actor #100, that were able to maintain such a trend were all formally registered NGOs with established field offices in the city of Chengdu, Sichuan Province. Among those that showed a downward trend in tie-building activities over time, with the exception of actor #115, the rest were all non-Sichuan based organizations that maintained their operation in Beijing both before and after the earthquake event. This shows that a certain degree of familiarity with the local culture, or in other words, the depth of local knowledge from practicing in the field, where the focal organization seeks connections to implement its work could be an important factor in sustaining information sharing ties throughout the time span depicted in this study. However, tie-creation trend for actor #20 showed that it was also possible for the non-Sichuan based organizations to start generating more ties over the longer term.

Post-Earthquake Actions (Emergence Response)

One characteristic to remember about the 138 actors at the first stage discussed above is that none of these actors existed before the earthquake. The actions of these

actors were triggered by the disaster event and were able to dedicate themselves solely to recovery activities. This is the reason why we observe a large number of "isolates" in the network graph figure 4.3*A*. In this section, I will examine the ways these newly established members were being integrated into the network by further investigate the out-degree measure.

I have already discussed the functioning nature of those actors that were not only in existence in the first time period but also maintained a relatively high level of communication ties for the following two periods. Here, I will pay particular attention to the actors that emerged as key players only after the earthquake and examine the persistence of their communication tie-building actions. In table 4.10, I used five ranking categories to depict the top levels of intensity for actors' communication outreach activities. The cut-off level of intensity is set at above 20 outgoing ties.

Table 4.10. Ranking of Initiation of Agency Action Intensity (Emergency Response)

	Civil Society Actor Identifier	Tie-initiating Action Intensity
Category 1	#24	(136)
Category 2	#3, #32	(76), (59)
Category 3	#135, #137	(38), (30)
Category 4	#123, #4	(29), (27)
Category 5	#7, #109	(24), (21)

I distinguished actor #24 in the first category because of its increasing number of connections that stood out from the measures of agency action among the rest of the actors. During the emergency response period, it reached out to 136 actors in the network which accounted for 99.3% of the remaining ones. What this means is that except one actor in the network, #24 reached out to everyone for communication for this time period. This is worth noting because no other actor in the network reached out to this level activity that is comparable to actor #24. It signals an invitation to look further into the characteristics of this particular actor in search for possible explanations of this type of information exchange behaviors.

Actor #24 is a registered non-profit organization originally established in 2004. The focus of its activities has been mainly towards collaborating with urban communities for communicating information regarding sustainable ways of living and developing

projects that are not only grounded in the local culture but also assist the general public to better understand the concept of environmental sustainability. Looking back at the period before the earthquake, the actor actually had communication ties to 4 other actors in the network. One was directed towards the government and the other towards the private businesses. The two other connections were established with non-profit organizations that were in the similar field of environmental protection as the actor itself. According to the online archival record of its activities right after the earthquake, the actor not only participated in a set of coordinated response activities among many of the domestic non-profits at the time but also was responsible particularly for the coordination of information exchange, resource allocation, and volunteer organization. Such a role during the emergency response period could be the determining factor contributing to the organization having established connections with 136 other actors in the network. However, going on observing its level of connection towards the long term recovery stage, the percentage of ties dropped more than 50% from reaching out to 99.3% of the remaining actors to 40.1% of others in the network. In other words, 59.2% of the communication relationships that it established during the emergency response period had not been carried into the recovery stage.

Here, the case of actor #24 sets a context for investigating the meaning of "capability" from a structural relation perspective. To say an actor is "capable" of doing something, one often has to assume that there are factors that are inherent to the functioning or the characteristics of the actor itself that pre-determines whether a goal can be achieved or not. But when "functioning" is defined by the ability of an actor to establish relationships with others, be it communication or collaboration relationships, the capability lens becomes a way of seeing and thinking by taking into account the co-evolution of "action" and "structure" side of the picture. In other words, if "capability" can be defined in terms of the available choice set that an actor can actually act upon by having the opportunity to choose from all the possible ways of functioning, then, the focus is not to be on those who already have achieved functionings (Sen, 1999) but on a set of possibilities that are available for the actor to attain when he or she actually enacted such initiation. Take the situation of actor #24 as an example, the sheer number of its communication connections decreased over time. But by no means is it interpreted as the actor being in-capable of achieving the various ways of functionings. A closer look at the specific types of connections of this actor revealed that not only all four ties that it established before the earthquake were sustained into the recovery stage but also they were accompanied by additional relationships from which the actor actively sought out

during the long term. Along the way, the changes of the network structure itself through the emergence of new actors and formation of new ties right after the earthquake also contributed to an increased opportunities for actor #24, thereby expanding the ways that it could choose to build relationships. As a result, throughout this study, any changes in the structure of the network environment are interpreted as a possible opportunity for a particular actor to perceive the circumstance as one that it can act upon. This approach is inherently different from perceiving the structure of a given social environment as one that is imposed and fixed over time, or merely existing to put constraints upon the focal actor. In fact, in the context of the conceptual framework of this study, actors themselves are seen as change agents in forming their own social environment by making decisions about whom and how to connect for relationship-building.

This way, the term "capability" in this study will be understood as a way of looking at how actors activate their own "agency" based on the perceived opportunities may be provided by the structure that they are embedded in rather than focusing solely on what they have already achieved. One functioning characteristic of actor #24 during the recovery stage is that it chose to focus in the area of environmental protection on top of all other types of activities. This choice of conducting work within the boundaries of the actor's original field specialty can help explain the decreasing number of its immediate

network ties. By “immediate network ties”, I mean the number of others with whom this actor has direct relationships with. In other words, “friends of friends” does not count in this incidence.

So far, the case of the agency actions of #24 pointed to several important natures of structural changes in the communication network environment. First, the action response efforts among all the civil society actors shortly after the earthquake opened up a specific opportunity for actor #24 to build up and expand its own network connections. Secondly, the overall information exchange structure persisted into the recovery stage. This can be inferred from the case of actor #24. When compared to connecting to 2.9% of the remaining actors in the network before the earthquake, the actor was able to sustain significantly higher level of relationships up to 40.1% all the way into the recovery stage.

The Case of Actor #24 (NGO24)

In the following text, I provide a qualitative in-depth examination of actor #24 as a result of its significant outreach activity position in the communication network. It is critical to further understand the driving forces of the agency changes from the actor’s point of view. The processes of making the decision to take initial action, sustaining the

action, as well as its own development experiences in relation to other civil society actors provide valuable evidences in tracing back the sources of the initial network formation, thus the structural environment of an emerging civil society.

Initially, by the interview account of the director of NGO actor #24, the decision was made to focus most of its actions by paying more attention to long term disaster recovery rather than emergency and short-term response. “We were hoping to base and develop our work connections mainly towards groups and organizations who aimed to practice locally, and we have not positioned our work in such a way to concentrate solely on the emergency response stage”, explained the director. With such a long-term definition of its agency action after the disaster event, there was a strong tendency for the actor to choose selectively in building communication ties with Sichuan-based grass-root groups and NGOs, particularly during the long term recovery stage. In terms of the collaboration tie formation, first of all, one of the primary motives for the actor to develop a connection over time was the other actor’s similar practicing background in environmental protection. Secondly, another source of motivation to establish long term collaborative partners can be related to the location factor. According to the account of the director (NGO24-01), the reason that some potential collaboration projects not being realized was due to the lack of geographic proximity with the field practicing site of the

potential partner. As one of the main actions taken by this NGO during the recovery times was in assisting the disaster-hit rural regions constructing an "environmental friendly toilet system" by building eco-friendly toilets for each individual rural household, the need to establish a long term relationship with the local communities was particularly important.

One of the action characteristics of project collaboration network formation among civil society actors, based on the account of the director, was in a pattern of "regional clustering" with those practicing in the same regions tended to establish collaborative relationships together. Along with this trait, he made further comment on an ideal type of collaboration network environment for disaster mitigation and preparedness:

> Looking at the current situation, many of the collaborations are characterized by regional divisions. I personally think there is not enough work-related collaboration among us. In fact, aside from the aspect of disaster recovery, the NGO network in Shenzhen worked out well. They had a tightly-knit work relationship among each other. The institutional environment provided by the government was nurturing. In order to do well in disaster mitigation and preparedness, it is very important to do professional works, passion and warm-heartedness will need to be supported by a well-functioning emergency preparedness mechanism. (NGO24-01-01[21])

Apparently, the sources of the actor's concentrated agency action in communication relationship-building came immediately after the earthquake, from two kinds of

[21] Original Chinese script in Appendix 4.4.01.

determinations. One was the thinking of activities beyond emergency response and disaster recovery into the long term social development of China. The other one was its practice focus paying particular attention to establish connections locally with others in the field of environmental protection.

Examination of the remaining actors in table 4.10 shows that actor #3 and actor #32 had comparatively higher level of post-earthquake communication outreach activities. For actor #3, it was formed only a few days after the earthquake as a non-registered social group originally defining itself to perform the function similar to that of a communication platform coordinating the response actions among grass-roots non-profit organizations. The actor's communication initiatives in reaching out to others expanded to 55.5% of the remaining network, which accounted for 76 communication connections at the emergency response period. Contrary to actor #24 whose reaching out activities encountered a sharp decrease over the long term, the information sharing connections for actor #3 climbed up to 98.5% of the remaining network during this same period. This accounts to 135 actors in the network.

Looking at the changes in its immediate structural environment for actor #3 over time, one can generate some preliminary conclusions regarding the changes inside the

civil society domain. One is that the earthquake did trigger the emergence of this group when ordinary local citizens voluntarily took actions to respond to the needs of the response efforts immediately after the disaster. While the case of actor #24 demonstrated the activation and persistence of the communication structure after the earthquake, the experience of actor #3 also revealed the emergence and continuity of the actor's institutional structure internally generated. The other lesson is that the continuity of this group's activities in the field over the long term suggested that possible inherent drives and motives can be identified to explain the sustainability of its functioning. In this respect, I present the following qualitative examination to trace its motivational origin of action.

The Case of Social Group Actor #3 (SG3)

Actor #3 first came into being as an established social group only 3 days after the 5.12 Wenchuan Earthquake. All of the three interviewees in SG3 directly participated in the formation and the continued functioning of the group's action since its establishment. When trying to discover the motivational sources of their individual actions in terms of forming the group in response to the disaster, it became clear that their spirit of devotion

to voluntary activities self-organization actions can actually be traced back all the way before the earthquake event.

Recently graduated from college and having worked for a local newspaper, the younger participant (SG3-01) was first introduced and drawn into the field of voluntary associations as she joined the local "youth voluntary program" and started to become active in different projects with her friends. This type of pre-earthquake action not only expanded her personal network connections but also brought her a sense of awareness of what the field of voluntarism involves and is all about.

> I first came to know the field of NGOs (*公益组织*) and participated in their activities because of joining the youth volunteer program. When they (SG3-03) were launching the third phase of the program, one of my friends participated in it as a volunteer, and she would invite me to be involved in some of their activities, or joined them as a volunteer as well. Then, I started to get to know many people. In fact, I rarely knew about the "circle" of NGOs before. But when I joined the hospital volunteer team just shortly after the earthquake, one of the project managers of the youth program called me and said that they needed some extra help. That's how I came here to participate. It's around the 16th of May, when a huge number of the wounded were transported here. I was taking care of a little girl for three days back then. (SG3-01-01[22])

With this prior familiarity in the field and a set of ready-built personal networks, which included close connection with one of the senior participants in this emergent group, she joined its emergency response volunteering activities immediately after the earthquake

[22] Original Chinese script in Appendix 4.4.02.

event. Although her original role was not one that was primarily responsible in officially organizing the group together, she became the first volunteer to work on information-sharing-related activities when the group itself started to take form.

The primary information-sharing activities took the form of Internet blogs and postings through the mediums of various online discussion forums[23]. With further voluntary participation of the local Chengdu citizens in disaster response, the informal connections between the group as an entity and other organizations expanded over time. Familiarity to the local culture, including people and the works related to building communication lines among those in need became important factors for her to make the decision to continue being devoted to the field over time.

When bringing about the question of motivations in participating and committing to the field activities of the group in the first place, the participant constantly referred to her devotion towards broader background-oriented concepts such as “circle” and “field”. The word in Chinese is often used as a slang, and can be interpreted as a large group of people who share common interests and being strongly devoted to a particular field of activity, so that those involved started to call themselves “insiders”. Obviously, the young

[23] See Appendix 4.4.03 for details (SG3-01-02).

participant perceived her involvement in the group not just as a type of ordinary work she was doing but as an act in personally engaging in the larger field of voluntarism. There is a sense of emotion being involved in terms of her devotion towards a larger cause for the society. And the constant identification of herself practicing in the "circle" demonstrated her willingness to be defined as one of those "insiders". This can be a primary indicator of the individual's capability to recognize her belonging and identification in terms of a larger sphere above the work activities themselves.

> Because when I just graduated from college by then, I still wasn't so sure about what to do with my life. Plus, from my experiences in working for the media, I felt quite disappointed. (When I participated in NGO activities) I felt that was a field that I had never encountered before and what went on in this circle…for one, very intriguing and the people working in this area were all very interesting…how to say it…it's like each person has his or her own distinct individuality, not like as if they were all of the same type. When I first came to know teacher YX from actor #73…because I had only known his name through newspapers and news reports on TV, and when suddenly seeing the real person, I immediately felt the difference when doing things with them (his team). In fact, (I) haven't thought much about how long I will continue doing this back then, neither had I planned for the long term, but at least at the current stage, I know that I am strongly interested in this thing, and have a lot of energy whenever I am doing it, so that's why I stayed and kept working in this field. (SG3-01-03[24])

As participant SG3-01 further identified her action with those practicing in the "circle", her own participation raised a level of self-awareness further empowering her to

[24] For original Chinese script please refer to Appendix 4.4.04.

make the decision for long-term commitment. In this case, the motivation came from the work allowing her being able to identify a type of shared interest and endeavors with others while preserving her own individuality and interest development.

Compared to the young participant's view of motivation, one of the senior organizers of the group offered another perspective on the factors that promoted actions and motivations towards voluntary activities after the earthquake.

> …as for us, as long as we can still make a living, and for people at our age, I don't want to do businesses, neither do I want to make a fortune of wealth. I'd rather prefer doing something that can promote the betterment of the society, that's it. No, nothing dramatic, don't think of it as something that special… (SG3-02-01)
>
> …our society was supposed to be a sound and healthy one, with everyone supposed to possess something that is in accordance with…what can be called…a moral bottom line, yes, it is a set of bottom line morals and ethics. If I have money, but I don't take out some for donation, then, I will have a moral deficit, right? This is what's like in a healthy society, and such is the most basic moral bottom line, a code of conduct. Nothing so significant, no. It's just because our society has fallen too much below (that basic line), people's behaviors became too lowly, too lowly, and when you compare the two states of existence, the gap maybe too big. Nothing more than that. (SG3-02-02[25])

For this senior participant, one of the primary drivers for his action can be referred to as one for the betterment of the society in general. There is a sense of self-giving-ness that guided him for voluntary activities. As we can see, both the younger and this senior

[25] For original Chinese script please refer to Appendix 4.4.05.

participant interpreted their action and motivations within a larger field of practices rather than perceiving their work as merely part of the group functioning itself. To them, such involvement brought further meaning and purpose beyond their immediate duties at hand. For the senior participant in particular, he was able to recognize that this larger purpose incorporated a desire to give back to the society and making personal contributions to the social development of China. According to both of the participants' reflections on their actions and motivations, the action responses to the disaster no longer can be looked at as merely a passive reaction simply trying to deal with the crisis situation. The event became a channel through which the participants in SG3 becoming aware of the "things" that they hold most valuable in life and being empowered to strive towards them alongside with others who share similar aspirations. And in the case of these participants, the valuable "things" are the motivations represented by serving and helping others not just in times of crisis but also their inner desire for the good of the society in general.

In summary, the initiation of voluntary action and self-organization for actor #3 was motivated by a joint awareness of the meaning of agency action larger than merely for the purpose of disaster response and recovery. The individual participation was interpreted as a sign of self-giving-ness towards working for the betterment of the

Chinese society in general. There was a collective recognition of being empowered through identifying their practices as part of the civil society action domain.

Following actor #3, actor #32 had the second highest level of out-degree in the second category. Before the earthquake, the actor had only one connection which accounted for 0.7% in the network. It quickly extended its ties to 43.1% of the remaining network right after the earthquake. And not only did all the connections established during the emergency response period continue through the recovery stage, but also the actor reached out to 57.7% of the remaining network during this period. This accounts for an increase of 20 more communication connections in the long-term recovery period. Taking a closer look at the actor's own attributes, at the time of 2011, it was a non-registered social work association based in Chengdu, Sichuan Province. The association was first established in 2010, after the earthquake event. However, #32 still named one other actor in the network as a communication partner before the earthquake. This means that there might be a blurred conceptual boundary in understanding relationship formation from the actor's perspective. In this context, the actor did not perceive that the formation of a tie involves the group to be formally established as reflected in registration status. In other words, the date when the actor started perceiving itself as a civil society group/organization could be different from the date when it first gained registration status.

This can be illustrated by the fact that the expansion of its network connections started before it became formally established. Since this study defined the emergency respond period is within 7 days to 1 year of time after the earthquake in 2008, by the time when the actor claimed to be established in 2010, it had already initiated contacts with 59 actors in the network. What can be said for this actor in particular is that the earthquake did trigger an action-oriented initiative or urge to connect with others primarily for the purpose of short-term disaster relief, regardless of the institutional status at the time. By further defining its field of work with a focus in providing support for other non-profit groups and organizations over the recovery stage, the immediate disaster response network actually enabled the actor to cultivate these relationships and expand its connections in such a way that shaped its goals in the long term.

Two other newly established civil society actors worth mentioning are #135 and #123. Actor #135 was non-existent before the earthquake and therefore started out with zero connections. During the emergency response period, the actor built 38 ties which accounted for 27.7% of the remaining actors in the network. The scale is further expanded to 62 (45.3%) ties into the long term recovery stage. Three of the connections that the actor established were not sustained into this very last period. The actor was able to maintain all of the remaining communication relationships and initiated 24 more

connections from the short term response period to the recovery period. Different from the other non-profit actors that were formed as one group or organizational entity as we have discussed in detail earlier, actor # 135 was originally established as a collaborative in partnership with two universities, one from mainland China and the other from Hong Kong. By "collaborative", the word exemplifies actions taken by professors and students from both academic institutions and who practiced social work related disaster relief and recovery in the earthquake impacted region. Although this particular entity was not registered at the time when this study was conducted in 2011, it had been working in the field as a social work station for almost three years since June 2008. And it was located in Yingxiu—one of the worst damaged areas and also at the epicenter of the earthquake. During the recovery stage, the station also became active in works related to women and children, environmental protection, psychological counseling, and livelihood support at the local community level. At the center of its social work practice was a value of promoting macro social policy change through the micro changes in individual, families, and communities.

Similar to actor #135, actor #123 was established as a social work oriented non-profit group. It was originally started up by an ordinary Sichuan local who voluntarily participated in the emergency response activities immediately after the earthquake and

then decided to devote his career in the long term recovery by establishing his own non-profit organization. The actor did not have any communication ties before the earthquake as it was non-existent at the time. Shortly after the earthquake, it reached out to 21.2% of the remaining actors in the network that accounts for 29 communication connections. During the long term recovery period, there was a slight drop in the number of relationships to 26, counting towards 19% of the remaining actors in the network. As a non-registered social group, the actor participated in the recovery activities such as providing support for elderly and disabled, women and children, as well as psychological counseling. One of the factors that could contribute to its minor decrease in communication connections was that the actor's defining areas of works became more focused and aimed at developing a particular area of expertise over time as compared to an all-comprehensive response-driven approach initiated at the emergency period. I use the following qualitative examination to provide a detailed account tracing the source of individual action that eventually led to the emergence of actor #123 at the group/organization level.

The Case of Actor #123 (SG123)

The second day after the earthquake event, the organizer of actor #123 (SG123-01), just as many other volunteers, came and gathered in one of the significantly earthquake impacted cities to make their own contribution to those in need. He initially opted to conduct disinfection works for the remains of the victims in order to prevent further epidemics in the area. As was recalled by him, through the process, he witnessed some of the most unforgettable tragic scenes in his entire life and the images left in his mind often came back to "haunt" him in his dreams. Through those days working in the disaster areas, the experience for the organizer was so traumatic that he eventually recognized that he had to seek professional psychological help in order to recover. This first-hand experience prompted him to be determined to stay in the disaster area and establish his own team to assist the psychological and other health-related recovery of children survived through the disaster. Just as how the organizer put it into his words with passion, "I have developed a tremendous amount of affection towards the people in the area where we are conducting our work since then and it has been the primary source of motivation for me to keep it going until today…". The main source of individual action, therefore, came from the participant's first-hand emergency response experience. This in

turn triggered his deep care for the recovery lives of the local people while forming an emotional attachment to the people and the place impacted by the earthquake.

The level of outreach action of actor #4 immediately followed that of actor #123. Its communication ties went from zero to 27 others in the network during the short-term response period. This outreach level went down to only 8 connections over the long term recovery period. As a non-registered grass-root group established in August 2008, there was one distinguished property of this actor when compared to all the others in the previous categories. And it was the diversity of member composition during the period immediately after the disaster event. Originally initiated by an ordinary driver employed in a private company in the city of Chengdu, the group was later joined by other migrant workers, university students, and small-business owners during the emergency response period and together, the actor participated in the housing-reconstruction activities as well as providing support for elders and disabled population. In contrast to the participation of those actors that were more established in the form of international non-profits and domestic ones with more developed specialties, actor #4 was one of the most grass-root groups formed after the earthquake. Such a bottom-up quality was similar to the nature of action initiation of actor #123 discussed earlier. However, the difference was that the communication actions of actor #4 became significantly less intense over the long term

recovery period. It is thus important to closely examine both the motivations for agency action at the individual and the group level.

The Case of Actor #4 (SG4)

The first time I met the key participant (SG4-01) at the time of my interview was in an early morning in Chengdu. We arranged to meet at a small coffee place near Sichuan University. He was a tall and enthusiastic young man in his late twenties. After we settled ourselves down at the cornered seats inside the coffee place, he started to tell me the stories of how the group actor #4 came into being and how the experiences after the earthquake had touched upon every part of his life.

From his account, the group was first established in August, 2008, which was around three months after the earthquake event. The self-organizing action was initiated by the founder, then an ordinary working class driver working for a foreign company in Chengdu. Participant SG4-01 was voted as the second group leader after the founder had stepped down. From the recall of the participant, the founder started recruiting volunteers online and the group quickly started to grow as a team. During the emergency response period, its volunteers participated in activities assisting "demolishing the earthquake-damaged housing and the reconstruction of new ones". The team had raised a significant

amount of operational donation funds through that time. However, as the official emergency response period ended, like actor #3, the group itself had to re-consider the variety of ways of transitioning.

At that critical point of transition, several factors could be traced to understand the decision for the group to take a particular trajectory in order to remain as an informal social group. First of all, the participant had a clear conceptual understanding of the difference between "NGOs" and "social groups". The former, especially the term "organization", was understood to involve "strict division of specialization and high level of professional works being performed" (SG4-01). The functioning of SG4 was therefore, only being perceived as a "group" rather than a formal "NGO". However, what was unique about the way that the participant saw the "group" status was in his openness in bringing about a "natural" type of growth rather than forcing the team to develop pre-maturely into a formal organization structure. For example, as one of the key leaders at the time of the interview, he had never intentionally expanded the group. Instead, he continued to lead the group with a guiding idea of "do everything with great diligence and do well in everything we committed to do. Only then, others will find us and there is no need for publicizing out works". Therefore, the sources of agency action of this social group arose from how its representative informant perceived the quality of its own

practices as well as its role in relation to others inside the civil society domain. From the perspective of the participant, other formal NGO actors with more "professionalized administrative structures" tended to be focused more on "publicizing and competing with each other" and these are the things that the group (SG4) would refrain from doing through the initial stages of development. This type of perceptual framework on the part of the participant would indeed guide the group towards an activity-based functioning focus. On the other hand, the intentional maintenance of an informal "group" structure formed a dilemma when it came to making a decision to transitioning the group into practicing long term in the field[26].

The personal experiences of the participant himself were essentially intertwined with the development of his group SG4. Before the earthquake, he was an ordinary working class Chinese citizen. His daily lives used to be occupied with constant job changes looking for the need of maintaining basic survival. From working as a car repairman to a salesperson, it seemed to him that the meaning of living was to sustain the pattern of "daily grind of work", while dreams and purposes of life were nowhere in the picture of his existence. After the catastrophic event and joining the group, the participant recognized a particular change in his way of thinking about life in general. From the daily

[26] For more information on the formal functioning activities of the actor, please see SG4-01-01 in the Appendix 4.4.06.

interactions with his group members, particularly from those opportunities to share thoughts with university students, for the first time the participant recognized a gradual change in him seeing life from narrowed view of his personal life to a reflection of the Chinese society. Turning from being almost "ignorant of the social issues" to thinking and pondering constantly about the "social justice concerns" that China faces and their root causes, the participant posed the following questions: 1) "why do we always have to wait until the last minute to recognize some measures needed to be taken or corrected? (In this case, wait until the moment that civil society actors had to actively perform their roles to complement the tasks taken by the state sector), and why not prepare the society in such a way that social justice can already in place? 2) Social development is not just economic growth, not like the extreme materialism exemplified in the Western countries. It is one that involves the awareness at the level of minds and ways of thinking. At the moment when the participant opened up and let out his inner thoughts to flow "freely" in telling such a transforming story, as a researcher and also a Chinese citizen, I realized that I have just witnessed a personal account of how a "civilian" whose cares for life only involved a self-revolving matters, being transformed into a "citizen" whose life was given a purpose towards giving and serving others in the larger society. Although this particular participant and his group actor might not be recognized or event made their

names in the response and recovery history after the earthquake, his story demonstrated the emergence of a civil society in its most primitive and bottom-up level.

As the participant led the group into the recovery period, he realized that the size of the group was gradually shrinking. And one of the most distinguishing reasons that he later recognized was many of its volunteers originally participated in the group left to work for larger NGOs. While one can definitely sense a tone of disappointment, he was quite proud by making a comment that the group started to become a "mediator in transporting skilled volunteers" to other NGOs. Essentially, the participant did realize the importance of transitioning into a formal organization to the survival and the influence of the group in the long term. In this sense, "the power of a single person will be indeed limited".

Such a transitioning process explained why the actor's outreach activities did not persist over time as was being demonstrated in the results of social network analysis. Although being less well-known among its peers and with less network influence, the grassroots nature of the group and the life-transforming experiences of one of its key participants provided a detailed illustration of how individual lives were being transformed in such a way that the meaning and emergence of "civil society" in the

Chinese context is being demonstrated. The investigation in finding the sources of action also revealed the creation of a sense of empowerment at the individual level through agency actions based on collective and interactive voluntary efforts. Like the participants of actor #3 and actor #24, the emergence of actor #4 as a civil society group was further triggered by an awareness of issues of social justice and social development beyond disaster response and recovery. The anchor of change was provided by actions that were perceived to be self-giving and serving others towards a larger cause.

The last two actors belonged to the fourth category in table 4.10 were #7, and #109. The number of out-degree ties of actor #7 immediately follows actor #4. The actor was first established in July 2008, two months after the earthquake. But the effort was originally initiated by a self-supported non-Sichuan resident who came to the Province as a disaster response volunteer immediately after the earthquake. As the emergency response activities receded, the initiator of the group decided to stay to pursue the provision of educational services for children who were not able to access a regular schedule to continue their education after the disaster. Similar to actor #4, actor #7 calls itself as a "volunteer team" rather than "organization" or "center". As we can see from these two actors, the formation of this type of social group in the context of Chinese disaster recovery is driven by a strong selfless and fearless endeavor at a personal level to

work for the betterment of lives of those impacted by the disaster. It is also characterized by drawing on the volunteer energies from people with variety of backgrounds rather than performing works as a continuation of a specialized formal organization, especially at the earlier stage of response. Most importantly, the informality exemplified by their structure and ways of utilizing the drive for volunteer service from members of society with a wide variety of background at the formation stage of these groups seemed to act as a driving force for these groups to carry their works into the longer term. Aside from the example of actor #4, we can see that actor #7 also acted to sustain 21 out of its 24 connections into the disaster recovery period. A closer examination of its connection partners reveals that over the long term, the actor lost its relationship with three other actors that it established in the emergency response stage, two of which were based in Beijing. The actor also developed communication connections with two new partners in the network. One is the actor #6 and the other is actor #119, both of whom were important players in terms of out-degree measures both before and after the earthquake.

The last actor in this third category that deserves attention is actor #109. It is a non-profit association providing welfare for the elders. Based in Tianjin, a city close to Beijing, it was first established in 1995 and was formally registered under the Ministry of Civil Affairs. The actor started out by having no connections with any others in the

network before the earthquake. But after the disaster, it reached out to 21 others and maintained these exact same set of relationships throughout the recovery stage by carrying out its specialty works related to supporting elders, disabled, and providing psychological counseling assistance. On the one hand, such a form of maintaining stability by keeping the exact same number of partners over time can be interpreted as the actor's virtue of persistence in maintaining its line of communication. On the other hand, this could also be interpreted as a lack of a spirit of entrepreneurship on the action side of the picture when comparing it with those who sought a growing set of network partners over time while maintaining what they had established in the period before.

Post-Earthquake Actions (Recovery)

Going back examining figure 4.5*B*, one other thing to be noticed is that for the first time, actor #97 emerged to become one of the top active agents in establishing communication ties aside from the level of action of actor #3, #51, and #24.

The Case of Actor #97 (SG97)

In terms of looking beyond disaster recovery in action outlook, actor #97 shared the similar drive in making contributions to the long term social development of the Chinese society. Its actions persisted to such an extensive degree that it became one of the core actors in terms of initiating connections in the communication network environment at the recovery stage. Examining the actor's ego-network results[27], it emerged to play multiple roles in facilitating information exchange among actors with different registration status, such as "brokering" and "gatekeeping" for post-earthquake response and recovery. A further look at the "behind-the-scene" stories for how roles are formed is informative to understand its emergence.

The experiences of the key organizer of actor #97 revealed several factors can be attributed as significant sources of individual action and motivation for the initial formation process of the actor. First of all, it was the emergency response activities collectively experienced by the individual herself and those she defined as "her own circle of friends". This "circle" included her personal networks in terms of work, friendship, and family relationships. Regarding the aspect of individual experience, the

[27] Please refer to Appendix 4.4*A* to 4.4*C* for ego-network results of actor #97 over the three time periods.

organizer (NGO97-01) recalled that she had been conducting part-time works assisting counseling and training services in the nonprofit area of practices since before the disaster. However, this type of activity only occupied a "small part of her life" before the earthquake, and she did not regard practicing in the "field of NGOs" as a profession that would require full time engagement. After the earthquake, "things have changed significantly" in terms of the way she experienced her immediate personal network relationships:

> This is because the earthquake stirred up a quite big impact, including my friends who are professionals. They would all participate in the medical support or other kinds of support efforts. So we were all drawn in because of the event, either willingly or unwillingly. You will be involved anyway. And will put a lot of efforts and time into this (NGO97-01-01[28])

Note that the disaster event was perceived as an agent acting to "stir up" on how she took action in becoming involved and eventually being engaged in the field of NGO practices. Initially, the emergency response efforts were collectively experienced through the intertwined relationships that the organizer had with her professional colleagues. Such has led to the organizer's own increasing amount of efforts and time being devoted to the field of NGO practices, particularly during the immediate stage of disaster response. What is worth further noticing is the "stirring up" impact of the disaster event on the

[28] Original Chinese script refer to Appendix 4.4.07.

development of individual motivation and eventually sustained action. The key emphasis here is to understand the motivational factors in this context. Based on the account of the organizer, the factor can be summarized as an openly-recognized awareness of the capability functionings (Sen, 1992) that became available in terms of revealing the "resilient" ways that Chinese civil society copes with crisis situations. The following account indirectly refers to how the organizer perceived such type of "resiliency" as part of her experiences:

> At the beginning, we were all engaged in this field of work, but I have never thought of developing it into so and so, just felt that this was a good way of doing things. Because I was also conducting this aspect of work before the earthquake, then, I started to feel to that this was an interesting field of work to be engaged in, and wanted to go further into this direction. So that's why I drafted a project application, which was approved later. I really wanted to do something at the community level, and they (actor #51) also held the similar ideas, so got approved by them. I thought this would be a good opportunity to do it by myself. (SG97-01-02[29])

Such awareness of acting out the available capability functioning choices to engage in the civil society domain was not clearly recognized at the beginning stage during the time immediately after the earthquake. Like the participants in SG3 (actor #3) and NGO49 (actor #49), the "resilient" ways of response was initially reflected in the individual's particular interest in practicing in the field of NGOs as a preferred direction of

[29] For original Chinese script please refer to Appendix 4.4.08.

engagement in civil society domain. The factor in maintaining the functioning capability reveals the second stage of "resilient" responses. With the assistance of another civil society actor, the organizer of actor #97 was able to develop the group's own autonomy in functioning towards a professionally oriented civil society entity engaging in the long term social recovery.

In this long term recovery stage, the motivations and actions at the individual level experienced a direct shift from activities engaging in the area of emergency response efforts towards social and community development that extended beyond disaster itself, and towards long term mitigation and risk prevention. Similar to the cases of #3 and #49, such transitioning dynamics of participants' recognizing their roles over time gradually became a more refined outlook towards the Chinese society as a whole and how the civil society groups/organizations can contribute in developing a social capacity for "resiliency" through ordinary situations. This is most clearly reflected in the personal account of actor #97 organizer:

> Later on I thought about taking opportunities to apply for doing projects relate back to the urban communities. This is because I think human rescue includes multiple facets, especially after a disaster. For example, at the earlier stage, we have conducted a lot of work, good or bad, either providing assistance or relief, it seemed like all the energy and efforts were concentrating on those groups of people in the areas that were significantly impacted by the earthquake. But the thing is, when the earthquake happened, I was also in Chengdu, also tried to run

away. In fact, all of us have experienced this process, including responding to the security alarms and so on. (SG97-01-03)

> So, it's not just those who were living in the areas that were being damaged by the earthquake were in need of attention, or can be called disaster victims. Or there is no need to put on that 'hat' called 'disaster victims'. If there is a need for attention, we all need attention, including those living in urban communities. This is because we find that there were lots of things that were missing even in ordinary communities. Up until now, for example, we really don't know how to respond to the emergency situations, how to use emergency exits, how to provide assistance. There are many things related to emergency response that we should have known but really did not know. Also including those basic understandings that should be part of the common sense, but the ordinary Chinese people really don't have. For example, many people don't even know how to wash hands correctly. We lack many of this kind of common understandings in our daily lives. That's why I am more inclined to go into the ordinary crowd. I also felt like much more attention was being paid to those living in the disaster area, and with the increasing assistances from the government on this group of people, the good results must be accumulated. So I felt like I can redirect my attention to focus on the common crowd and conduct my work related to ordinary communities. (SG97-01-03[30])

Her account here essentially reflected a particular lens through which how the recovery period was perceived by way of a type of social development. First of all, note that how the response efforts had prompted the participant to further ponder what it meant to "rescue" and help the people whose lives were impacted by the earthquake. From her first-hand experiences in physically and emotionally going through the happening of the disaster, there was an eventual personal discovery of how to define the concept of

[30] For original Chinese script please refer to Appendix 4.4.09.

"disaster victims". Secondly, the lack of knowing the appropriate emergency self-help activities at the very first moments when a disaster hit would, according to the participant, put those living outside the areas of significant earthquake impact as the "victims" category, specifically the vast majority of the urban population. The lens that she chose to understand the "human rescue" aspect of disaster recovery, therefore, further expands to include the everyday practices conducted by people in the society as a whole. Essentially, the role for the organizational actor itself was not one that is being confined to response and recovery from this one particular disaster anymore. The actor's position was perceived as one with a focus on "mitigation" and "preparedness", which would incorporate issues involving social capacities for coping with risks. Thirdly, this coping and adaptation mechanism is one that needed to be developed inside the "ordinary people" living in "ordinary communities", rather than completely focusing the attention on those in the areas "significantly hit" by the disaster event at the time. Such is the motivation behind the sustained actions of the group that eventually led to its establishment of a nonprofit entity functioning in the area of health for urban community population. Fourthly, the last section of the account also revealed how the participant saw the relationship between a civil society actor and the state. Note that she did not perceive functioning of the two sectors as being one replaceable by another. Rather, it is one of

complementarity while confirming the essential role of the state especially inside the areas that were significantly hit by the earthquake[31].

The second conceptual re-evaluation reflected through the participant's account is the understanding of activities that can be counted towards "emergency response". To the organizer of actor #97, the concept is interpreted with a much broader perspective that incorporates incidences beyond those conducted only after a catastrophic natural disaster.

> Most of the times I would think that responding to disasters at our level of work only involve the aspect of emergency response, but emergency events cannot be confined to only one kind. Most of the times we will all encounter similar circumstances or those that are even more severe and difficult to deal with. Then, knowing how to respond to these other emergency situations would be very important. So the reason that I wanted to do works related to ordinary communities is because all have to face these emergency circumstances in our lives, although of different kinds for different people. It's not just after a catastrophic disaster that we have to deal with such situations. Then, we need to think about how to respond and face them, how to build a community social support network, how to develop healthy communities. And these are the things that I would prefer to choose to focus on. (SG97-01-04[32])

Similar to her expanded interpretation to the concept of "disaster victims", the organizer provided another lens demonstrating the breadth of the scope of "emergency response" activities. Note that she understood it within the context of how people respond to crisis situations that arise from people's everyday lives. Although different in their particularity,

[31] For further related original accounts, see Appendix 4.4.Case97.1.

[32] For original Chinese script please refer to Appendix 4.4.10.

the “normality” of having to face and deal with emergency incidences is perceived to be part of people’s lives, and sometimes these circumstances will be even more difficult to cope with than those come from a natural disaster. As a result, the initial motivation in the search for sustainable action responses to position the functioning of the actor #97 came from the organizer’s awareness of taking a social responsibility for the organizational actor’s long term role development. The establishment of a healthy community support network assisting ordinary people to cope with these “emergency” situations is recognized as part of the desired coping mechanism.

Such a motivation for the formation of actor #97 cannot be separated from the organizer’s own personal transformations after experiencing the earthquake event.

> In fact, change includes many facets. For example, how you change as an ordinary person, because you experienced this thing, as everyone living in Chengdu had experienced running from the earthquake, running down the stairs, including receiving notices to avoid later earthquake impacts, living in tents, all these experiences. This was a significant event in our lives. And your whole life and ways of living will be touched and changed. Even though I did not participate in the response efforts, as long as I have experienced the event itself, I will still be changed. Many people will re-orient their ways of thinking about life in general, including how to develop themselves in the future. This is why even if I don’t participate in the volunteer activities and engage in the field of NGOs, my life still would be changed as a result of the earthquake event. (NGO97-01-05)
>
> The second type of change is that…like many of my friends…they are professionals practicing in the field of NGOs, and would be drawn into the response efforts after the disaster, whether it was proactive or reactive. Then, you

> will have experienced the entire process, although it would be different for those living in Chengdu and those living in the areas most significantly impacted by the earthquake. But regardless, as long as we have experienced to be part of it, our lives would be going through big changes one way or the other. It did not matter whether you participated in a full-time manner or part-time manner, we were all volunteers. As long as you participated in the process, it will be different. Some of my friends are continuing doing it as part-time volunteers, and they kept doing it. This is a type of change too, behavioral change, a change of living arrangements. They wanted to arrange these kind of works into their lives now, which is very encouraging. The development of volunteerism in the entire Sichuan Province can be traced back to the happening of this earthquake event. So many people have come to know and become volunteers, and treated it as a way of life. It doesn't have to be full-time devotion. But for me, I just decided to become a full-time employee working for a formal NGO in order to be directly involved in the field, and this is a type of change as well. (SG97-01-05[33])

One factor of primary importance is the "life-transforming" characteristic of both types of changes. At the personal level, the significance of the event changed people in ways of how they see their own lives. At the level of action in terms of the voluntary coordination and self-organization process, there is a type of transformation in the perception and the behavior of those participated in such a process. Note that this kind of transformation is characterized by action taken in the emergence of civil society almost becoming a way of life blending personal lives with professional ones. What this means is that the earthquake itself, was not simply an event that triggered certain temporary voluntary response particularly from those who directly experienced it. The transformation is

[33] For original Chinese script please refer to Appendix 4.4.11.

perceived as a type of social change that fundamentally altered how people look at themselves as well as how they related towards others to make contributions to the society. Essentially, such social change was first triggered by a life-altering event, enhanced by the recognition of civil society actors' social responsibilities in building up the capacity for risk-coping for the society in general. And it was further distilled through the actor's participation in activities related to long term social and community development.

The Case of Actor NGOLF (NGOLF-01)

The actor NGOLF was not listed as one of the civil society actors in the original social network survey. Its unique existence status was discovered through the acknowledgement and referral of the participant of actor #4. Recall that one of the main concerns in transitioning the group towards a registered status, from the perspective of the key participant of actor SG4, was a lack of independent decision-making mechanism that could come along with such a formal institutional status. The participant of SG4 was obviously being cognizant of the possible alternatives that the group could gone through and well aware of the institutional routes being tried out by other civil society actors. Therefore, during my interview session, he kindly mentioned NGOLF as an example.

The uniqueness of NGOLF lies in its institutional status in terms of registration format, which differentiated itself from all the other civil society actors examined in the network investigation. It was decided that such a characteristic renders a closer qualitative examination of its nature of emergence and institutional status formation within the Chinese disaster recovery context. The following thematic description of its experiences will provide a further detailed documentation of the various types of institutional transformation that civil society actors actually went through after the earthquake.

The motivational source for the establishment of this actor originated from a determination to serve the grassroots groups and organizations stayed in the earthquake-hit areas conducting long-term recovery works. As described by the participant NGOLF-01:

> At that time, many people were thinking this way (doing volunteer work), and many of the grassroots volunteer teams emerged and later disintegrated. But since the sheer number of emergence was so big, there were still many stayed and maintained functioning long term. They've always wanted to do these kinds of things, whether or not it is in disaster areas or not. There are some people I know, they would continue doing similar works even when they went back to their own provinces or hometowns, and became very active leaders regardless. The works that we are focusing on is still related to disaster recovery. And this is because what we wanted to do is to provide a communication platform for them, or

provide training programs, or other types of resources for exchange. (NGOLF-01-01[34])

This account depicted, from the perspective of the participant, that it was an intentional choice being made for the actor to function in supporting the continuity of those newly emerged social groups through the longer term. Note that after the disaster event, there were two types of sustained self-organization processes been identified. One was the action taken by groups that decided to carry out the works related to civil society into places other than the disaster areas. This reflected the willingness of civil society actors whose actions were brought forth after the earthquake event in bringing their devotion back to their normal daily lives outside the context of disaster recovery. This suggested the tendency of continued actions in the civil society domain long term after the disaster event all the way into the phase of "resilience-building" beyond extreme situations such as a catastrophic event. The other side of the picture was the action chosen by those groups who decided to stay in the disaster area by being devoted to the long term recovery phase and making contributions towards the social development of local communities. It is in this latter action category that the actor NGOLF performed its tasks in facilitating the communication channels particularly among grassroots groups conducting recovery –related activities locally. From the outset, this motivation looks

[34] For original Chinese script please refer to Appendix 4.4.12.

similar to the path chosen by actor #3. However, there were indeed differences among the two types and the discussion will come back to this point in the following section related to "source of civil society emergence".

The participant also distinguished the date from which the actor became registered and the date of the original initiative in action actually took place after the earthquake. In other words, the question regarding "date of establishment" can be interpreted by civil society actors from two perspectives. On the one hand, it can be defined as the date from which the actor's registration certificate first took effect. And for this actor, it was towards the end of year 2010. On the other hand, it can be defined as the first day that self-organization action was initiated. For the participant of NGOLF, this latter type of establishment wasn't as clear-cut as the former way of the definition. To the extent of the exact date being identified, he was not able to recall and confirm the date of the first agency act took place in the field.

> LU: So when your team was first established?
>
> NGOLF-01: "On the registration certificate, it says December 25, 2010. But I cannot remember clearly of the exact date of our establishment date. For groups like us, we can only tell the experiences for each person in that aspect. For example, if you ask him or her when your group/organization did was first established, they can only tell you when they first came to Sichuan. More or less

like this…the small and more grassroots groups slowly emerged out of a quite hectic situation at the beginning." (NGOLF-01-02[35])

This account revealed the original nature of the self-organization process if it is being understood from the date that the first individual action of a particular civil society actor can be identified. In terms of understanding the initial formation of especially those grassroots social groups that came into being after the disaster event, the second way of defining this "date of establishment" can be used to trace the origin of action and motivation during the primary stage of emergence of a civil society actor. Within the context of disaster response and recovery in the case of China, the day of the participants' arrival in the Sichuan Province after the event could also be a significant landmark in the Chinese society realizing and acting upon the "agency freedom".

As a nonprofit grassroots focusing on serving others civil society actors, the "communication platform" role performed by the actor was carried out in the format of providing training services. Initially, a notice will be sent to the local nonprofit groups informing them the actor's upcoming activities. Then, those who concentrated their recovery works about in youth-development could send out representatives over to participate in the training programs. At the time of the interview, the participant of

[35] For original Chinese script please refer to Appendix 4.4.13.

NGOLF recalled having collaborative relationships with ten to twenty partners[36]. He further recognized the important role of the online medium not only in connecting with other civil society actors but also in opening up some of the first voluntary opportunities for the participant himself right after the earthquake.

> The internet has played an important role from the very beginning. This was very obvious, and I can tell from my own experiences. After the earthquake, I felt the need to do something, but not really sure how to start. Then, I went on QQ and to take a look at what was going on. So gradually, I started to encounter and get to know many others, some turned out to be professionals. For example, there were some who came from Hong Kong or Taiwan. And some acted as our guide or consultant, as they provide us with systematic trainings. Also like many organizations from Taiwan, they also brought their experiences from the 9.21 earthquake and to show them to us. (NGOLF-01-03[37])

Note that as the boundary of the voluntary coordination efforts expanded through virtual means, the sources of actions and motivations also arose from the skills and experiences being brought forth by foreign professionals in the field of civil society. At the level of awareness and understanding for the actor's own professional social work practices, these learning channels found and established online provided valuable sources of guidance for the development of the actor.

[36] For detailed account, refer to Appendix 4.CaseNGOLF.1.

[37] For original Chinese script please refer to Appendix 4.4.14.

Summary

This concludes the current discussion on the initiation and change processes of actors' information seeking activities comparing the periods before and after the earthquake. I measured agency actions by using the network concept of "out-degree" representing the number of communication connections that each actor reached out to. I also looked at the normalized mean, which expresses out-degree as a proportion of the remaining actors in the network. This is done in order to compare the measures across networks with different sizes.

Among the top ranked actors with relatively high out-degree ties, the findings in this section revealed that the earthquake event triggered two general types of out-reach information seeking actions. For the actors that were already in existence before the earthquake, the analysis showed mixed results as the non-Sichuan-based domestic NGOs tended to recede in communication actions after the earthquake while others with established local offices in the earthquake impacted areas tend to be persistent in activating further relationships with others regardless of their country of origin and registration status. For emerging actors that came into being after the earthquake, the ones listed in Table 4.9 all reached a relatively high level of agency actions during the

emergency response period and were actively maintaining these relationships into the long term recovery period. Some of these domestic grass-roots groups chose to be more active in the longer term and this is demonstrated by the steady increase of communication partners from the time when they were established to the time when its three years after the disaster event.

On the one hand, "out-degree" measure represents actions taken on the part of the initiator towards others for information and communication. On the other hand, it also represents an outlook from which one understands how actors in a particular network perceive the possible choice sets they may have and act upon such percepts. "Out-degree" itself is thus an outcome measure that exemplifies such decision-making processes of actors. I would like to formalize this concept as one way in measuring "capability", theoretically understood as a representation of the various combinations of functionings—beings and doings—that the person (Sen 1992) or a group in focus can achieve. Since the unit of analysis of this study is groups and organizations, the term "capability" as this research revealed is a collective way of choosing. The availability of the choices for each of the actors can be mapped out by the existence of the structure that they were embedded in at one period of time. But I would argue that the availability of choice sets themselves may not be sufficient to interpret "capability" within the realm of

"freedom". The perceptions and behaviors of the actors also play an important role in shaping their own ways of possible beings and doings. In other words, how they connect with others, whom they choose to connect, and the circumstances that prompt their action or in-action, are all crucial in defining the boundaries of their functioning capability set. Therefore, as stated earlier, this section is a first step in my effort in exploring the meaning of "capability" as originally reflected by Amartya Sen (1992). In the future sections, I will continue investigate the different faces of capability from an action-structure point of view.

Incoming Nominations and Status of Prominence (In-degree)

Overview

In this section, I examine the concept of "in-degree" in network analysis. This term measures the incoming ties from others towards the focal actor. It is a way of looking at action in reverse direction as compared to "out-degree". In network analysis, those actors with higher in-degree have generally been interpreted as the ones who are "prestigious" or "prominent" among the others in the network. This is because those who are being named by many others may possess certain degree of "power of knowledge" that many would like to seek out to. Within the context of this section in investigating the

communication networks, one could interpret an actor with higher level of in-degree was being perceived as a trustful source of information by others. In the following paragraphs, I will look at the univariate statistics for actor in-degree measures in order to further examine the various ways of understanding and interpreting "status of prominence" along with considering the characteristics of the actors.

Treatment of Actors inside the State and the Market Domains

Before delving into presenting the results, I would like to introduce the way that the actors in the state and the market system were being treated in this study. Recall that the primary focuses of the research were the actors in the civil society domain in terms of groups and organizations, their emergence, as well as their actions and roles in constructing an institutional infrastructure that in turn shapes their own actions and behaviors over time. In order to understand such a process of change, how civil society actors relate to the ones in the state and the market system becomes an integral part of the investigation. In the Chinese context, some of the most commonly discussed types of relationships that an actor in the civil society has with the state and market domains can be found in the form of legitimization with the government and financial support from the

private sector in the market system. Legitimization with the government often entails a prolonged process of getting registration status from the Ministry of Civil Affairs by finding a government agency that is willing to be the sponsor or by registering itself in the business category. The private sector, often based on their orientation towards philanthropy and the particular specialty of the civil society actor, can become a source of financial support the latter. However, rarely do research look at the other side of the picture, which is how the connections are perceived by social groups and non-profit organizations themselves through the lens of different types of social environments, and the consequential adjustments in their behaviors when establishing or making changes to the relationships with each other over time. In order to examine these aspects of the civil society in action, I designed the study in such a way that the state domain was particularly referred to agencies, branches, and departments of the local government, and they were all integrated into one entity coded as actor #1 in the survey questionnaire. Similarly, the private businesses or any for-profit organizations were coded as an integrated actor #2. This way, these two actors do not have any out-going ties in this study. Any tie that directed towards them is understood as a perceived communication or collaboration connection from a civil society actor's point of view.

Pre-Earthquake Incoming Nomination Action

Power of Influence (Category #1)

Table 4.11 shows the categorical break-down of the actors who received high level of incoming ties compared to the others in the communication network before the 2008 Wenchuan earthquake.

Table 4.11. Communication Structural Foundation (Pre-Earthquake Incoming Nomination Action)

	Actor Identifier	Incoming Tie Intensity
Category 1	(#1, #50), #94	11, 9
Category 2	(#118, #119, #51), (#24, #27, #134)	8, 7
Category 3	(#100, #37, #38)	6
Category 4	(#137, #14, #19, #2, #25, #95, #110, #61, #70)	5

The first category included actor #1, #50, and #94. Both actor #1 and #50 received a total number of 11 tie nominations during the period before the earthquake. For actor #1, this number meant that the government entity as an aggregate was contacted for information and communication purposes by 11 different civil society actors during the period before the earthquake. This number jumped up to 31 at the emergency response period after the disaster event. In other words, only 8% of the remaining actors in the pre-earthquake network perceived actor #1 as a communication partner. Its communication partners went

up to 22.6% during the short-term response stage. There were 30 actors, which accounts to 21.9% of the remaining actors in the post-earthquake communication network sustained their actions toward the state during the long term recovery period. Therefore, there was a rather significant change (up to 14.6% increase) immediately after the disaster and the level of incoming connections remained to be relatively persistent over the long term. Such a trend can be interpreted in the following way. One is that the state actor was considered as a trustful source of information among civil society actors when it comes to disaster emergency response and became a "popular" point of contact as compared to the connections it had before the earthquake. It also remained as a prominent source of information throughout both the short term and the long term recovery periods after the disaster event. The "status of prominence" of this kind of actors can be interpreted as a power of influence for others to take actions to make connections toward them.

As for actor #50 and #94, neither of them turned out to be a respondent to the survey. The decision for keeping them in this section of the study is that they all have connections that were named towards them and were, strictly speaking, still weaved in as part of the fabric of the social structure that other actors were embedded in, or in other words, depended upon. These connections were particularly important in communication

networks because having a high level of in-degree is a representation that others in the network perceived the focal actor as a source of the needed information and the actor can have certain degree of "power" over those who approached it in the first place. In the context of this study, this kind of "power" can be manifested in the different characteristics that these non-responsive actors might have, such as areas of specialization and registration status. Therefore, we take a closer look at actor #50.

Different from the actors we have seen so far, actor #50 came into being as an online information service platform for Chinese domestic non-profits who were seeking institutional development and growth. First initiated in 2005, the entity existed as an exchange platform similar to that of a public sphere that promotes public discussions among emerging non-profit social groups and organizations in bringing about an initiative of public participation of Chinese civil society education. The main medium for such a public sphere in this Chinese context is through the interaction between an online virtual society and a real world networked society. With its purpose of encouraging and providing opportunities for those who would like to participate in the work of social services, this non-profit entity did not simply play a role as an online information provider but more importantly as an active participant in building Chinese civil society at the most grassroots level. Therefore, I treated it as an "actor" in this research. The actor's

website used the term “grassroots NGOs” to refer to the non-profits groups and organizations that were formed by actions of Chinese citizens. Browsing through the information posted on its webpage, one can navigate news, ideas, and tools related to assisting the advancement of domestic non-profit actors. This partially explained the popularity of this actor before the earthquake. Same with the state aggregate, it received 9 incoming ties. After the disaster, more civil society actors sought information from it and the number of connections rose to 16 during the emergency response and 17 during the recovery stage. Although this surge of incoming connection-seeking behavior from others towards the actor is less in number when compared to those directed towards the state actor for periods after the disaster, the results still showed that the earthquake brought forth a jump in information-seeking partners for #50 and also a steady increase over time.

Another actor that received a high level of nomination from others in the network is #94. It is a registered non-profit organization based in Beijing. It was first established in 2007 as a Chinese domestic non-profit and its area of expertise is in environmental protection. Although the actor was one of the prominent actors in terms of the high level of nominations from others before the earthquake, this status was gradually given over to a number of other actors across the network over time. Comparing its own nominations

over time, the actor had incoming ties with 10 others in the network for both emergency response and recovery periods.

Communicator and Facilitator (Category #2)

The second category of actors that were being approached by many others included: #118, #119, #51, #24, #27, and #134. With the exception of #118, the rest of the actors in this group were also active in initiating connections which reflected in their high out-degree discussed in the last section. Let's first look at some of the characteristics of actors #118 and #119. Both actors were originally based in Hong Kong and the difference was that the former established its field office in Sichuan to devote works in earthquake relief and recovery while the latter has been involved with the local communities in the province before the earthquake since year 2004. Although as a late-comer, actor #118 had a formal registration status with the Ministry of Civil Affairs and its area of works during the recovery stage of the disaster had been concentrated in livelihood-building activities, particularly in basic infrastructure reconstruction. One factor that should be noticed is that even though the date of the field office establishment of #118 was after the earthquake, during this period before the disaster, it still was

nominated by many others as a source of information and perceived as a "popular" communication partner. This was due to a specific characteristic of how non-profit groups and organizations function in the context of China. Such actors can start their field work and practice long before they become a formally registered entity with either the Ministry of Civil Affairs or as a business entity. For actor #118, it actually entered mainland China and engaged in works related poverty reduction and disaster management since 1987. Its projects expanded across multiple cities in mainland over the 20 years. Eventually, the actor got established its formal registered field office in mainland China in 2004. Therefore, it is possible that the actor had built its reputation over time and others were more willing to extend their communication ties to it for the period before the earthquake leading to the disaster event.

Actor #119, in comparison, was not registered. But its field experience in engaging communities dated back almost 4 years before the earthquake event. Regardless of its institutional status in terms of registration, the areas of its participation in the disaster recovery stage encompassed a group of much broader focuses than that of actor #118. Aside from conducting activities in building up livelihood in local communities, the actor was also involved in housing reconstruction, taking care of the elderly and disabled, women and children, environmental protection, psychological counseling, and

most importantly in activities pertaining social recovery at the local level. The actor was also among those who initiated high level of connections before the earthquake as well. From this, it can be concluded that status of being "prominent" illustrated by the case of actor #119 was enacted in two aspects: "communicator" and "facilitator" in the communication network for the period before the earthquake. As a communicator, it was active in reaching out to others to forge new ties not only to seek out information from others but also to spread its own influences, such as letting other actors know its areas of expertise and its values. As a facilitator, it shares information requested by others and also becomes a medium connector among those who had ties directed towards it and those to whom it initiated such ties. From a long term perspective, if actors with such roles can be identified and the sustainability of these roles can thus be examined over time after the earthquake. It is one of the beginning steps in defining the institutionalization process within the civil society domain.

Looking across the three time periods incoming ties for actors #118 and #119, the in-degree measures for both of them increased steadily after the earthquake. The former had 15 ties named toward it and the latter had 13 ties. Over the long term recovery stage, ties for actor #118 increased to 17 and to 14 for #119. Compared to the type of surge in incoming ties for actor #1, the type of increase for these two actors is relatively mild.

The other two actors in this category were #24 and #51. Recall that actor #51 also had the highest number of out-degree activities in this period before the earthquake. Therefore, it exhibited similar role characteristics with that of actor #119, being both a communicator and facilitator in the network. During the emergency response period, the incoming ties of actor #51 increased from 8 to 23, accounting for 16.8% of the remaining actors in the network. This number climbed up to 28, representing 20.4% of the actors during the recovery period. Therefore, this actor was also perceived as an "influential" communication partner, not only before the disaster event, but most importantly shortly afterwards and all the way into the longer term. The level of its perceived significance continued to have a steady increasing trend after the initial surge during the emergency response stage. Also considering its high level of out-degree both before and after the disaster, what we can conclude about actor #51 is that its embeddedness in the network originated from two sides. One is what I would call the "action" side of the story. It came from the actor's inherent willingness to put itself "out there", initiating connections and in network terms—the act of attempting to be more "influential". But when examining the specific types of actions that the actor involved in, we get a different picture for the motives behind such "influence". Established itself pursuing towards an "incubator" function to provide support for the smaller grass-roots non-profits in China, we can say

that actor #51's activity agency comes from its courage in developing the strength of others in the network. In other words, its "influence" does not have to be interpreted within the boundaries of counting the number of connections this particular actor reached out to as measured by out-degree. The development of the out-degree activity of those whom this actor has connection to over time can be utilized to examine the focal actor's degree of agency. This way, actor's "attempt to be influential" not only can be reflected in an inward-looking way through its own immediate outreach activity, but also can be modified by turning the lens towards others revealing their actions. The other side of the "embeddedness" story involved the perceived level of prominence of others in the network toward the focal actor, which can be revealed through its in-degree measure. Because #51 was considered as an important and trustful source of information both before and after earthquake, it was reached out to by many others over time. What this revealed was that the level of "acceptance" from others also plays a role in how an actor can be involved in the network structure. Note that I decided to use the word "acceptance" rather than "popularity" to represent the level of incoming ties. The reason is similar to that of using "agency" rather than the phrase "attempt to be influential" in the out-degree activity. "Acceptance" is an act of others in the network that can reveal the underlying drives of those actors to take the actions to initiate those incoming ties toward the focal

actor. It is more others-oriented when compared to using "attempt to be influential", which is essentially self-oriented. Within the context of non-profit activities in disaster recovery in particular, I argue that such an outward-oriented interpretation of the embeddedness of actors could be an alternative representation of this type of actors' motivations and drives than seeing their actions as a result of merely wanting to be "influential" on top of others or "popular" for their own purposes. This can be revealed by the types of activities that they participated in, and the emergence as well as sustainability of ties the actors forged over time.

Actor #24 also shared these two sides of the story by being both an active agent and being accepted by others in the network over time. The exception is that the actor was not among the most active in initiating connections before the earthquake like that of actor #51. It had few communication partners for this period of time. But its outgoing ties reached to almost every other actor in the network during the emergency response period, while close to half of these ties were maintained into the recovery stage. In terms of how much others perceive it as a significant source of information and outreach partner, the actor not only received the same number of nominations as #51 before the disaster, the measure more than doubled into the short term response stage with a steady upward trend into the long term recovery.

Both actor #134 and actor #27 received the same number of nominations as #24 at this stage, which counted towards 5.1% of the remaining actors in the network. Since actor #27 was a non-respondent to the survey, I will briefly discuss some of its attributes and moving on to other actors who were embedded by both out-going and in-coming connections. Originally coming to mainland China as an international NGO functioning in the area of environmental protection, actor #27 established its field office in Chengdu in 2003, overseeing projects related to sustainable development and environmental education in rural areas of the region. The entity was formally registered as a non-profit organization in 2008. This actor was further recognized as an important communication partner right after the disaster as it was named by 14.6% of the remaining actors. The number climbed up to 16.8% during the long term recovery stage. What this means is that this actor was perceived to be a renowned source of information both before and after the earthquake event. However, it is difficult to comment on its agency role as a "facilitator" in the network because we do not have information regarding it's out-reach activities.

For actor #134, its level of incoming ties increased from 5.1% before the earthquake to 9.5% immediately after the disaster, and further advanced to 13.1% at the last stage. We can see that there was a steady trend of the actor gaining acceptance by others in the network over time and being contacted as communication partners. One

special role that can be observed about this actor when comparing to the others in this category is by looking at its agency activities reflected in its out-degree. The actor was not particularly active in building communication relationships before the earthquake. This can be shown by it reaching out to only 1.5% of others in the network at that period of time. In other words, actor #134 received a lot of information but did not send much out. To use a phrase in network analysis, these types of actors are often called "information sinks", which means that they collect facts more than they create them for distribution. To put the interpretation into the context of the actor's characteristics, certain attributes may help explain the emergence of such a role and its change trajectories over time. First of all, the actor functions as a research center formed by a collaboration initiative of two Chinese universities. The Center conducts civil society-related research projects by particularly focusing on the development of Chinese domestic non-profits entities. In other words, for the period before the earthquake, other actors in the network perceived it as a trustful source of information but as an academic research entity, it did not focus its attention solely on outreach and sharing information with other non-profit entities as it primary purpose. Secondly, the actor also conducts action-oriented research, from which its goals were defined as providing strategies for non-profit entities to develop and promoting general volunteerism in the society.

Therefore, aside from its research purposes, the actor did strive to be an agent of change. This role was revealed and brought forth after the earthquake disaster when it initiated contacts with 19 actors, accounting for 13.9% in the network. Compare to its 1.5% outreach level for the first period, one could say that the disaster prompted an actual realization of the action side of its goal. During the emergency response stage, its role also turned to be one that was more of a "communicator" rather than an "information sink". This can be seen by its outreach activities spread through 13.9% of the network while its incoming nominations reached to 9.5% of the network. However, this trajectory did not fully sustain itself into the recovery stage. The actor's outgoing activities lowered in intensity to 8% of those in the network while the incoming ties reached at 13.1%. But this did not mean that the actor was switching back to a role close to an "information sink" as in the first time period. Based on its increasing outreach activities from building connections to only 1.5% before the earthquake to 8% of the remaining actors in the network during the recovery stage, what can be concluded was that the actor transformed itself into not only a "communicator" with a growing level of agency efforts but also being empowered by others' recognitions to be a "facilitator" with more actors willing to share information with it.

"Home-grown" Communicator (Category #3)

The third category is composed of actors #100, #37, #38. They all received 6 nominations. For the period before the earthquake, each of them was named by 4.4% of the remaining actors. Actor #100, a Sichuan-based community service and development center, was also an active initiator of communication relationships at this period of time when it reached out to 11.7% of the remaining actors. Comparing this measure with the level of incoming nominations at 4.4%, it is safe to say that the actor was at a stage of actively building ties and proactively sharing information towards others in the network before the earthquake. From the figures for the period immediately after the disaster, it is apparent that the tie numbers for both of its out-degree and in-degree went up with the latter figure doubled. When examining the mean for this period, the actor reached out to 13.1% of the remaining network as compared to being nominated by 8.8% others. What this meant is that while continuing trying to be an "influential" actor, it was also being increasingly recognized and sought out as information sharing partners shortly after the earthquake. However, such opportunities for the actor to be on the receiving end of communication ties and being a "facilitator" to pass on the information to others were not sustained into the long term recovery stage. While keeping itself up with creating ties and expanding its network to 14.6% of the remaining others during the long term recovery

period, the actor's incoming nominations went down to 5.1%, which was almost comparable but slightly higher than the figure before the earthquake. In general, as the actor came into existence before the earthquake event, the disaster seemed to have triggered a temporary surge in the in-flow of information as well as incoming communication ties during the emergency response stage. However, such a trend did not sustain itself for the long term. The actor, overall, can be categorized as an agent in communication tie construction throughout the three periods of observation.

The commonality among actors #37 and #38 is that both of them are Chinese grass root non-profit research centers. Their areas of expertise focused on poverty reduction and sustainable growth in the rural regions of Sichuan Province. Both were established before the earthquake event. For actor #37, its network outreach connection activities were completely triggered by the happening of the disaster. This was revealed by its outgoing ties increasing from 0% to 15.3% before and after the event respectively. Comparing this to the level of its incoming nominations over time, the actor started out as an "information sink" in the sense that during the period before the earthquake, it did not send out any initiation signaling its efforts in information-sharing and connection-building towards others in the network. This happened at the same time when the actor was often being contacted by others as its incoming ties were counted among the highest

reaching to 4.4%. For the period shortly after the disaster, the actor became highly active in that it connected to 15.3% of the remaining actors in the network while its incoming nomination level climbed up to 8%. Over time, as the actor was increasingly being recognized and contacted by 11.7% of others in the network during the recovery stage, its initiation activity went downward to 8.8%. This shows signs that the actor role was being transformed from an information receiver and a reactive agent to an active agent in building its communication relationships through its response of the disaster event. However in the long run, the actor showed some tendency to reverse back into its role as a receiver during the long term recovery stage.

"Home-grown" Sources of Information (Category #4)

Moving on to the last category, actors #137, #14, #19, #2, #25, and #95 had relatively high level of incoming information and contacts from others in the network. Recall that actor #2 is an aggregate for all the private businesses that were involved with others both before and after the disaster. Together with actor #1, the two of them were conceptual approximates for the state domain and the market domain. Any incoming ties towards them were to be interpreted as how civil society actors perceive their roles in

relation to the state and the private enterprises. In other words, the changes in the number of incoming ties towards the two actors can be thought as measures by which to look at how "influential" they were through the "eyes" of the other actors in the civil society. Such a measurement for perception originates from the behavioral changes of how civil society actors make their decisions to reach out to actors in either or both of the state and the market. In this study, I argue that being able to tell explicitly the particular changes in network behavior from one set of actors to another is an important step in designing future policy interventions that could encourage cross-sector communication and collaboration, especially for issues like disaster recovery and mitigation.

The number of incoming ties for the business aggregate was 5 at the stage before the earthquake and that accounted towards 3.6% of the remaining actors in the network. Comparing this level of nomination with that of the state aggregate at the same period, the latter was contacted by 8% of the actors in the network. But at the emergency response stage right after the earthquake, private businesses are perceived to be a "popular" communication partner by an increasing number of civil society actors. The nomination level reached to 16.1% during emergency response, which became almost 5 times more than that before the earthquake. This amount of tie changes was higher than the changes occurred for the state actor comparing before and after the disaster. The

incoming percentage of connections for the state actor went from 8% to 22.6% before and immediately after the disaster event. It was about a 3 times increase as compared to a 5 times increase for the business actor. What this means is that the emergency response stage of the disaster generated certain amount of synergy among the civil society actors towards their perceptions of private businesses and further triggered their actions to initiate contacts with them. With three less incoming ties for the recovery period, the level of synergy dropped by a few percentage points from 16.1% to 13.9% through the long-term recovery stage. An overall comparison of the incoming tie trend for the state actor and the business actor revealed that the government entities were still considered to be the primary source of communication contacts both before and after the earthquake. Although the civil society actors recognized the important role of private enterprises immediately after the disaster, the level of actions towards the business actor did not reach the intensity as those towards the state actor when looking across all three stages of changes.

Moving on to the rest of the actors in this fourth category, actor #137 was being reached out from 3.6% of the remaining actors in the network all the way to 10.9%, and 11.7% for the three periods respectively. Again, the majority of the change was "jump-started" during the emergency response period and remained stable afterwards.

Comparing its level of in-degree with its out-degree discussed in the last section, we can see that the actor actively initiated communication ties with 13.1%, 21.9%, and 12.4% of the remaining others for the three periods respectively. The general trend is that the actor tends to play a role of agency in terms of reaching out to others more than a role of facilitator in information sharing. This can be inferred from its higher levels of tie initiation than tie reception across the three time periods. Both in-degree and out-degree experienced a "jump-start" right after the earthquake with a more dramatic change on the side of its in-coming ties. The actor did gain attention from others in the network and was approached by increasingly many others over time while its agency initiatives tended to wane down towards the longer term.

Actors #14, #19, #25, and #95 are all Chinese domestic grass-roots non-profit organizational entities in existence before the earthquake. With the exception of #14 and #25, the other two actors responded the survey so that their out-degree measures can be observed. Actor #19 is a Beijing-based and registered non-profit organization. Its functioning focus has been in the area of poverty reduction specifically targeting rural women in China through empowerment education with an emphasis on their gender awareness. The entity was first registered in 2001 under the business category. During the disaster recovery stage, it engaged in actions assisting women and children,

psychological counseling, and livelihood development. Examining across the change patterns of its in-coming ties, 3.6% of others in the network named it as a communication partner before the earthquake. This was followed by 8% and 8.8% for the emergency response and recovery periods respectively. It was recognized by more than two times in terms of the percentage of other actors reaching out toward it right after the earthquake. And the incremental change remained at a relatively stable level into the long term. For the out-degree activities, the actor started out by it reaching out to 5.1% of others before the disaster, to 2.2% during the emergency response period, 19.7% during the long term recovery stage. Instead of actively building connections with more actors in the network right after the earthquake, actor #19 reached out to a level of contacts that was less than it started out with. But the surge of the number of out-going ties exemplifying its agency effect actually came during the recovery stage. This was a distinguishing pattern among the actors that so far have been examined. On the one hand, actor #19 was increasingly recognized by its peers throughout the periods after the earthquake. On the other hand, the actor actually narrowed down the number of its communication partners to three others in the network, with two of them being actor #25 and #95. The other one is actor #3, a Sichuan-based grass root non-profit that was established after the earthquake. Then, actor #19 became highly active only during the longer-term stage to initiate contacts. One

possible explanation for this kind of behavioral change pattern can be attributed to the actor's location and its field of expertise. The lack of an established operating field office in the area where the earthquake happened could hamper its ability to communicate effectively with others that were operating in the field. But this factor would not explain how the actor became active during the recovery stage. Based on the actor's practicing field, while it did have the motivation to actively participate in the response of the disaster, finding the communication partners that it could share information particularly regarding the development of rural women could be the reason why that there was a delayed effect on agency activities. In other words, reaching out to the "right" ones could take time.

One other possible contributing factor that helped the actor to gain agency response is to whom it was connected at the second stage. Actor #3 became an important coordinator of information immediately after the earthquake, with its out-degree reaching to 55.5% of the network and 27% nomination rate by others. The connection with this type of facilitator could have assisted the focal actor further identifying its targeted connection partners during the recovery stage.

Actor #95 also specializes in women's rights and capacity-building in areas of health, disaster relief, and rural community development. It was first established before the earthquake and registered under the Ministry of Civil Affairs. During the long term disaster recovery period, the actor participated in activities such as housing reconstruction, taking care of elders and disabled, assisting women and children, and the livelihood-building. This actor only initiated 3 contacts including to the state actor, the business actor, and actor #3 during the emergency response stage. Its in-coming ties did increase from being contacted by 3.6% to 6.6% and further to 7.3% of the remaining actors in the network. While the actor became increasingly "popular" among others in the network, it did not seem to open up to others and showed limited agency activities towards others. The earthquake did trigger its initiative in communicating with some critical actors, but these relationships did not sustain in the long run.

Since actors #25 did not respond to the survey, we can only observe the changes in how others had reached out toward it. As we have stated earlier, incoming nominations can be interpreted as the level of acceptance and influential-ness among others in the network. If both actors #25 and #95 were also perceived as important source of information after the earthquake, then, we can state that #19 has indeed reached out to some of the "helpful" and "right" actors in terms of sources of information that even such

a limited amount of relationship contacts at an earlier stage could still generate increasingly active responses later on.

Actor #25 was "reached out" by 3.6% of the remaining others for information before the earthquake. The level jumped to 11.7% and 12.4% for the two periods following the earthquake respectively. The actor received an increasing attention from their peers after the earthquake and was being contacted more over time. It is a formally registered nonprofit organization and officially based in Chengdu, Sichuan Province. As it came into existence in 2003, the actor's areas of expertise have been environmental protection, particularly in water quality control including environmental education and information exchange with local communities. After the earthquake, the actor started coordinating intensively with actor #3 and the two actors often held joint educational seminars in order to assist the growth of domestic grass root non-profit groups and organizations. Therefore, it did make sense for actor #19 to get to know actor #25 through #3 and communicated directly with actor #3 to seek the needed information. This type of "friends of friends are friends" relationship exemplifies one of the most basic natures of social structure that actors can be embedded in the network. This study will further discuss such characteristics throughout the later sections. For now, I will continue

examining the characteristics of actors in different categories in terms of their level of communication connections.

Looking across the characteristics of the status of influence and the agency actions of the actors in the fourth category, one thing they had in common was that they were increasingly approached by others as important sources of information since before the earthquake event. Although some of their agency actions fluctuated over time, the level of acceptance toward them from other civil society actors' point of view continued to have consistent upward trend since the disaster. The source of this kind of influence can indeed be attributed to their being Chinese "home-grown" civil society organizations that persistently had been involved in local practices and the lives of people in the local communities.

Post-earthquake Status of Influence (Emergency Response)

In this section, I examine the behavioral changes of civil society actors during the emergency response stage. This is another way of illustrating action changes and identifying emerging informational sources in response to the earthquake event. The results are shown in table 4.12 below:

Table 4.12. Communication Structural Change (Emergency Response Incoming Nomination Action)

	Actor Identifier	Incoming Tie Intensity
Category 1	#3, #1	37, 31
Category 2	#49, #51, #2, #27	26, 23, 22, 20
Category 3	#50, #24, (#109,#25,#125), (#137,#14,#118)	19, 18, 16, 15
Category 4	#38, (#61, #119, #134), (#100, #70)	14, 13, 12
Category 5	(#110,#122,#123,#15,#19,#34,#37,#94)	11

Note: actors included in each parenthesis had the same level of incoming tie intensity.

Looking briefly across the five identified categories, numerous new civil society actors that did not have high level of incoming ties became important sources of information right after the disaster. Another observation was that the number of ties in general went up significantly especially for those with higher in-degree measures.

New civil society actors, in the form of informal social groups and formal NGOs organizations, came into being during this particular period of time. The variability of the in-degree measurement can be looked at as an indicator of behavioral responses as a result of the overall shift in the structure of the network after the disaster. The levels of nomination were divided into different categories and they were created subjectively in relation to how others were being perceived at the same period of time. For cross-stage comparisons, I focus on discussing those actors that were newly created after the

earthquake as well as those that were in existence before the earthquake but did not make it into the top categories for the pre-earthquake period.

Empowered "New-comer" (Categories #1 and #2)

The first actor that deserves attention is actor #3. As discussed earlier, it was first formally established as a grass root nonprofit group just three days after the earthquake on May 15, 2008. The entity remained un-registered until 2012. Despite of its informal status, it actively participated in the emergency response stage by defining itself as an information coordinator for non-profit groups and organizations. These other civil society actors came to Sichuan with a desire to engage in the disaster response process but weren't exactly sure of what kinds of assistances were mostly needed. Actor #3 assisted in directing them to the right places and shared information upon requests with these actors. Indeed, such activities can also be inferred by the words appeared in its name, such as "disaster relief assistance" and "service center". Looking at the actor's in-degree measurements, it received nomination from 27% of the remaining actors in the network. This put it in the first place among all the other actors and also on top of the state actor during the emergency response period. For a Chinese domestic grass root nonprofit, this

degree of nomination or “acceptance” rate by others in the network should not be overlooked. From what we have explored so far, the actors that had maintained high levels of incoming ties were all formally registered domestic or international nonprofits. These organizations often had been operating in their fields for certain amount of time even before the disaster event. One is tempted to expect these organizations that were being “well-respected” before the earthquake to continuing occupying some of the top “influential” positions after the disaster. While some of them did sustain their roles at later time stages, there were two distinguished aspects about actor #3 that rendered it a candidate for special attention in this research. One is the correspondence between the timing from which it was first formed to the point that it was recognized as the “go-to” actor among the other actors in the network. One would imagine that it normally takes some time before a “new-comer” can be accepted by others in the network, especially from those who occupied certain positions for a long period of time, let alone considering whether this new actor can challenge the ways information exchange connections were structured. The tie pattern changes for actor #3 demonstrated that the institutionalization process of social structures can be “interrupted”, or more precisely be “renewed” at the same time when the agency actions of certain new actors are being initiated.

The second aspect of this specific case was that the unregistered informal status of actor #3 had not been the determining factor for others to make their decision on whether to establish a connection towards it, especially at the stage of emergency response. The actor was reached out by 27% of the remaining actors in the network and this outnumbered the 22.6% received by the state actor. Actors that received higher levels of incoming ties such as #50 and #94 from the previous stage were also lagging behind actor #3 for this time period. Considering these two factors behind the emergence of this "new-comer" in the civil society domain, examining the characteristics and the stories behind its establishment at the group level became a necessary step.

The Case of Social Group Actor #3 (SG3)

First of all, the establishment process through which the group was institutionalized informally as a whole can be traced back to the actions and experiences of another key founding participant shortly after the earthquake. This participant came from an academic background at one of the local research institutes and had been active in the field of voluntarism before the disaster event. Years of practicing voluntary activities provided her with close friendships and work connections with members of

other nonprofit groups and organizations. From her account, the proto-type of the group (SG3) originated from an in-depth discussion among her and representatives from two other partnering organizations amidst of the emergency response period.

> Because at that particular situation, there were so many things that needed us to do, but what were the things that we can actually do? A few of us were already acquaintances, DX, TJ, and I were collaboration partners for many years, and we were very familiar with each other. At the time when the center was first established, many of us already knew each other well, either from previous project collaborations, or through regular communications, all familiar with each other. This was very different from Z's team, many of the participants in his team have never met each other before. They were completely strangers to each other and got together under a special condition. This is the most obvious difference between us two organizations at the very beginning. Their situation was different, many people did not know each other, while only a few knew each other. I remember when we first began our work, we decided not to engage in close collaborations with complete strangers that we had never known about. What this means is that all of our collaboration partners should be our acquaintances. (SG3-03-01[38])

As we can see, former organizational partnership relationships and thus friendship ties established long before the earthquake event played an important role in the formation of this group. Familiarity and trust were the two most valued factors that tend to determine its future collaboration partnership-building processes. Here, the participant openly admitted that one of the group's first self-organizing rules was to find collaboration partners only with those certain degree of familiarity has been established beforehand.

[38] For original Chinese script please refer to Appendix 4.4.15.

Secondly, the decision to focus the group activities on information sharing was also based on the organizer's (SG3-03) awareness of the then available human and financial resources to the group at the time. On the one hand, having worked side by side with another grass-root organization that did participate in coordinating materials resources that came into the area for earthquake relief, the organizer of group SG3 realized that the shortage of human resources that could be available to carry out such purposes. On the other hand, the difficulties for obtaining its own financial resources also became a constraining factor for the group to conduct activities that require large scale involvement of human and material resources.

> Another decision we made at that time was not to engage in fund-raising activities, and a lot of us seemed to agree upon this. It was because we heard from Z's team that they had to coordinate trucks and truck of materials for transportation, and we did not have the human and physical resources to conduct such grand scale activities. And we not have the financial resources either. To be honest, our organization was truly in short of financial resources. By then, during this meeting, two of the other organizations agreed to provide us with some necessary finances to support our work…so neither did we possess that kind of human resources, nor did we have other kinds of resources, and that's why we did not engage in material aspect of response activities. (SG3-03-02[39])

Thirdly, although the senior organizer (SG3-03) was well aware of the two types of constraints mentioned earlier, by no means they had become un-surmountable

[39] For original Chinese script please refer to Appendix 4.4.16.

obstacles for the group to be persistent in actively participating in the emergency response efforts at the time. The group organizers quickly realized that the aspect of information services was an important activity to consider. The decision-making process was being revealed by the senior participant as follows:

> We thought of the things that we could do at that time, one is information services, to us this was very important, because…even those companies such as Wanke would come to us to seek information, so we want to do this work related to information resources. If material resources did come here, we also thought of a way to coordinate "point to point" for locations. For example, if I am at Xiang'e, there they urgently needed blankets, when outside donation arrived, if your organization is here, then, we could direct you to go and directly transporting the needed materials to Xiang'e. This way we won't be acting as a mid-transit-point for material resource transportations. We have made it very clear at the beginning. We were an information platform, and if one had a need and the other had the matching resources, then they can directly contact each other for further actions. What we were responsible for was the release and the distribution of information. So this is why you could see that we were more engaged in activities related to information dissemination.
>
> Of course we also conducted some other kinds of activities. Back then, we would organize an information release session every morning. Many NGOs would come to us and get information on where to go and those locations with open transportation accesses. At that time, there was a group of volunteers from an auto-traveler's club, they all had communication stations in their cars, and that became very helpful to retrieve on-sight information. As they traveled to different disaster impacted areas, they could easily contact and inform us whether the rescue team had arrived, which locations were in need of food and water. Then, as many (NGO groups and organizations) from Beijing, Shanghai, and Guangzhou, or other places around the country came to us, we would provide them with the information we had to help them make the decisions on where to go. But they would eventually have to make the direct contacts by themselves. So this was how

> we operated back then and all the way until the end of May, when the situations were basically stabilized. (SG3-03-03[40])

There are several factors that can be characterized as the guiding sources of action when the group was first self-organized and emerged as a formal entity. First of all, it was the ability to clearly define the desired area of focus within a short period of time. Within only several days after the disaster, the group participants were able to identify the establishment of an information platform servicing other grass-roots groups and organizations as its primary functioning focus. From an organizational perspective, this told us that the agency performance of this particular civil society actor was purposeful at the very first moment of emergence. This further reflected the "resilient" nature of individuals who formed the group after the catastrophic disaster. The state of "resiliency" in this case, can be characterized by clear goal-orientation and purposeful actions in a period of uncertainty and extremely stressful conditions.

Secondly, the group emergence activities were also exemplified by the group's ability to carry out its goals within certain degree of flexibility. For example, according to the senior participant (SG3-03), there were situations when other organizations came in with material resources at hand but did not know where to direct them. Rather than

[40] For original Chinese script please refer to Appendix 4.4.17.

turning them away, the group participants would establish a channel specifically directing information to match local needs and the material resources being received from other nonprofits. This way, not only was the information platform function fulfilled, but the communication ties being made through the coordination processes also served to further expand the group's information-sharing network.

Thirdly, the guiding source of self-organizing actions also came from the group organizers' desire to serve other earthquake response and recovery nonprofit groups/organizations. An aspiration to serve the needs of other civil society organizational actors was one trait that distinguished this group from all others. The senior participant made it clear by re-stating the group's functioning purpose as one that focuses on "orderly participation, effective servicing".

> One thing that I also remember is that on the first day, we called upon the focus of our work as 'orderly participation, effective service". This was our own slogan and mission. When we were deciding on what aspect of disaster response works to focus our attention on, it became clear that our center would not directly go into the disaster area, nor would we face directly toward disaster victims. We provide services towards NGOs, particularly those focus their supports on disaster response and recovery. We positioned our works clearly at the very beginning. We are not an organization that directly participates in disaster relief efforts. What we do is to provide services to those NGOs that worked directly in the disaster

impacted areas. This has been the case from the beginning until now. (SG3-03-04[41])

Some of the other types of activities that nonprofit groups/organizations have been involved were: 1) assisting housing recovery, 2) helping elders and disabled; 3) women and children; 4) environmental protection; 5) psychological counseling; 6) livelihood reconstruction. As we can see, during the process through which the group (SG3) initiated its coordination efforts helping all these other civil society actors coming together with these diverse background specialties shortly after the earthquake event, the opportunities for building up its own information network also expanded.

When it comes to understanding and tracing the action and motivational sources for sustaining the group emergence structure over the long term, the driving factors, from the perspective of senior participant SG3-03, was one that still intended to fulfill its original establishing purpose of serving others. When asked about the long term plans in the area of disaster recovery, it became clear that the motivation for the group's sustainability over time derived from the continued existence of other nonprofit groups/organizations in the field practices.

What we are thinking now is that as long as there are NGOs working in the disaster area, our organization should be committed to continue functioning. This

[41] For original Chinese script please refer to Appendix 4.4.18.

> is because there are many grassroots groups emerging, and they will come to us for assistance such as information. We would also inform them of various kinds of seminars, training sessions, or providing them with temporary office spaces here, or other helps of similar kinds.
>
> If none of the NGOs exists, then there will be no need for our existence anymore. We have never thought about changing our work focus to another area. But this will also depend on the situations. At the current stage, there is still high demand for our services. It's only been three years after the disaster. Take the NGO activities in Taiwan and Japan for example, they continued their work on disaster recovery even it's been more than ten years. So this field of work here will continue as well, as the impact of the earthquake here was even more catastrophic, with more areas affected. So we think this would be the type of work that requires long term commitment. And during these three years, our work has been relatively stable, mainly through our service provision on our web and other daily services. (SG3-03-05[42])

Note that the participant chose the word "survival" to emphasize on the importance of continued existence of other groups/organization and how it relates to the group's desire to continue performing its functioning through service for other civil society actors. There was a sense "co-dependency" and "co-evolution" among this particular group and all the others that it tried to provide services towards. On the one hand, one would not survive without the survival of others. On the other hand, the capability to flourish among others will also determine the ability for actor SG3 to flourish. In other words, "growing together" is perceived as the key to making the initial emergence sustain over time. The participant's definition of "information sharing and exchange" activities was also

[42] For original Chinese script please refer to Appendix 4.4.19.

expressed in a way to exemplify such as process of "growing together" and "co-evolve". Not only is the regular information sharing activities important, but also various kinds of meetings, training seminars, and even the provision of temporary operation spaces, were a part of what she accounted as "information delivery". This is clearly a much broader interpretation of what we normally think of activities of information sharing and exchange. In this case, it incorporated a message of "solidarity" with relationship-building in both personal and work functioning spaces. Therefore, the process of "solidarity" or "cohesiveness" formation that we observed in the section of network structural changes was not just a dynamic in the physical tie compositions, but most importantly, it incorporated a willingness to build deeper connections that sometimes involve relationships at the emotional level among group/organizational actors.

This point can be further demonstrated and elaborated by the young participant's (SG3-01) reflection on the decision-making process, from which the group was trying to make the transition from an emerging volunteer entity at the emergency response stage to a formally established institution with the intention to function in the longer term.

> Our regular meetings every morning went on until the end of May, by then, the most urgent emergency response period already passed. During that time, we all did things together without distinguishing who was from which organization. But after that emergency stage, many of us went back to our own original work positions. But for some entities, they would immediately consider what aspects of

works they could focus on as a group/organization afterwards, for example, either in livelihood or in information services.

In fact, the center is like a spontaneously self-organized entity, but at that particular point of time, we all need to consider something…we also conducted meetings to discuss whether there will be a need to continue our works. Many of our partner organizations would suggest that we continue. On the one hand, having such a communication platform would greatly facilitate the connections among us. On the other hand, the existence of such a platform would also facilitate the coordination of not only information exchange but also material resources. In fact, for things like these, I think, it would be better to provide a platform for connection and communication activities among local NGOs that are based in Sichuan. Now we already have a foundational momentum going, it is a good thing to provide opportunities for all of us to make connections with each other, not just for collaborations but also for deeper emotional connections. (SG3-01-04[43])

First, note that the timing factor transitioning from the emergency response stage into the long term recovery stage did prompt the need for the group to decide on the continuation of its functioning. This suggested that in addition to the disaster event acting as the original change agent inside the civil society domain, the evolution in the self-organization process of the group was also directed by a set of self-defined timeline guided by the behaviors of other civil society actors at the time. Towards the end of May, which was about two weeks after the happening of the earthquake event on May 12, came a period of time when the group had to make a decision on whether to continue functioning as an information servicing nonprofit entity. That was also a point in time

[43] For original Chinese script please refer to Appendix 4.4.20.

when most volunteers representing different groups and organizations who worked together during the most immediate emergency response period went back to their own routine work schedules.

From the perspective of the young participant, the motivational sources of the continued functioning of the group SG3 as an information servicing center after the emergency period were two-folds. One was the maintenance of a platform for mass communication among group/organizational nonprofit actors. The existence of such a facilitating entity was perceived as a foundation for not only channeling information but also material resources. The other motivational source was the need for connection among local "NGOs" in Sichuan Province. Note that the term "connection" was interpreted in such a way that was more than just formal information sharing. Like the interpretation of the senior participant, the term incorporated a type of desire for a bonding environment among nonprofit groups and NGOs. It was also expected that being "connected" in such an environment will not only "breed" further collaboration opportunities but also building up closer relationships where emotions were involved. In this case, these participants envisioned their group SG3 could act as a provider of this kind of environment so as to facilitate the type of connectedness that incorporated emotional bonding rather than simply the formal activities of information exchange.

It is also important to recognize how participants perceived and acted out "solidarity" and "cohesiveness" behaviors as the group itself emerged through a process of interactions with other participating groups/organization in just a few days after the disaster event.

> Since the very beginning, we were all very enthusiastic and dedicated to do all these things, but there were still some issues along the way. Take those who have been doing conducting works in this field for a long time like our organizer G, they will often have an in-depth and forward-looking perspective to look at things. At that time, we made it clear to defining our works as complementing what the government was doing, and that means what we were doing must be of little amount as compared to the government tasks. But at the same time, those were also the things that the government might not have time to pay attention to particularly at that emergency response period. And that is…the saying…government lead, and our job was to participate, facilitate, and complement. Also, they did pay more attention to volunteer works at that time, and they understood that you came here to do good. So they helped print some volunteer training brochures to distribute to those coming to the resettlement areas and along with providing some training sessions. (SG3-01-06[44])

At the very first moment of emergency response stage, the group's emergence, as experienced through the young participant (SG3-01) was characterized by the following three traits[45]. One was the coordinated actions among sub-groups of volunteer activities with different work focuses. The other was the "coming together" initiatives among groups/organizations from other parts of the country working alongside with each other.

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[44] For original Chinese script please refer to Appendix 4.4.21.

[45] For details of the interview, refer to SG3-01-05 in the Appendix 4.4.22.

The timeliness of their action to be at the site of the disaster demonstrated a sense of eagerness and "togetherness" for civil society actors to serve the earthquake impacted areas at the first moments of needed support. The third factor that characterized the source of emergence can be attributed to a type of enthusiasm that incorporated the willingness to complement the responsibilities held by the government. It is important to recognize that the role of the group was perceived as one that was not confrontational towards the action of the state, but one that was enacted by joint participation during the emergency response period. This can be understood as a primary sign of how the civil society and the state domain came in touch with each other at the group/organizational actor level since the event of the earthquake. The source behind the "joining" process can be summarized as a passion in service through the practicing areas that complement the state activities. To this particular group, such area was being actively identified as the need for information sharing among nonprofit groups and organizations through emergency response and the long term recovery times.

The inherent nature of this group was also intertwined with its emergence process as a stand-alone entity. At the very beginning, the proto-type of such a group was founded upon the existence and interactions among many "NGO partners". As each one of these actors brought with them their own resources, organizational partners, and

volunteers when interacting with SG3, not only the group's own network connections started to build up but also more of the other civil society actors came to be aware of its existence, thus reaching out towards it. At the emergency response stage, some of the information service related activities practiced by the group included posting the most up-to-date response related news on the website and holding daily report meetings gathering information from the on-site teams. Transitioning from the short-term response towards long term recovery, the agency actions of the group continued its primary motivation in providing a relationship bonding environment for other civil society actors who came to the area conducting disaster recovery-related works. Below are two accounts from the young participant's reflection:

> This is because the foundation that formed our organization is based on many other groups/organizations, on many other NGO partners. And they will come in with their own resources and partners, or their volunteers. So, gradually, we all got to know each other, and would come here. We would post information on our website, because after all, we had the first-hand and just-in-time information at that time. People would come and gather here. We always had a morning meeting at nine back at that time and every task team would report on the important pieces of information they had, where they had been on that day, the relevant safety issues as such.
>
> After the emergency response period, one important aspect of our work was to assist (the development of) other groups/organizations through seminar programs, trainings, and activities. All they need to provide is the attendees, and we will facilitate and provide all other kinds of services for them. For example, if one seminar is specifically related to projects financial management, or training related to disaster management or environment related topics, we would act like a

> resource 'warehouse' for our partners. We would invite the most appropriate working partners to our training programs taking into consideration of the requests of all the participating partners. We then would help them arrange all the logistic parts of the conferences. These were the types of works that we were occupied with into the recovery period. (SG3-01-07[46])

As the long term activities transitioned towards more of a training and seminar-based type, it can be seen that the group's purpose of the service in the recovery phase focused on facilitating the connections among other actors as well as on the provision of a nurturing environment for newly formed civil society actors to grow and develop as stand-alone formal entities. Again, this demonstrated the willingness of the group as a whole to have an inter-dependent relationship linking its own long term survival to the sustainability of the other civil society actors. Such a tendency as a service-oriented agent was also brought about through an observant nature of the participant working for the group, especially in terms of the awareness of local grass-roots nonprofit formations after the earthquake event. For example, the young participant of SG3 realized that during the period from year 2009 to 2010, many more grass-roots entities were being formed locally, especially in the earthquake impacted areas in Sichuan Province. One type of emergence was in the form similar to informal volunteer groups and has yet developed an idea of perceiving themselves as "NGO associations/organizations". Activities conducted by this

[46] For original Chinese script please refer to Appendix 4.4.23.

kind of grass-roots groups had a more informal volunteering-orientation. Another type of emergence was characterized by formal NGO organizations supporting local communities in the hope that their action can empower the people inside the communities so that a group of locally-grown "backbones" can eventually arise for long term self-support. According to the young participant, many of the grass-roots formed after the earthquake functioned with this latter type of purposes. Aside from the cognizant nature of those representing the group as being fully aware of the state of emergence of other civil society actors, the group's practicing focus on providing services in capability development and training for its partners during the long term recovery stage further demonstrated two of the most important sources that drove the emergence of this particular actor. One is the intertwined nature of the functioning of SG3 with the emergence of grass-roots nonprofits through the provision of a bonding environment shortly after the disaster event. The other was the continued self-defined action in services that specifically targeted the long term growth of other newly emerged nonprofit groups/organizations, thus developing a co-evolving process of inter-dependency between the survival of the group itself and the capability for others to sustain themselves over time[47]. Essentially, the group SG3 was a survivor on its own and at the same time a

[47] Please see SG3-01-09 for detailed interview accounts in Appendix 4.4.24.

provider exercising its agency through a network that connected actors beyond the act of information exchange and project collaboration. The connections reflected a type of actors' relationships at the cognitive level that not only could facilitate mutual growth in the long term, but also a self-awareness of each of actor's own responsibilities and experiences. The following account illustrated the core of such an emerging process of civil society:

> When it was into the year of 2009 and 2010, our works mainly lean towards two directions. Essentially, we were still doing service-related works, be it information communication or coordination. Then, we gradually found out that many of the very grassroots groups were being formed after the earthquake, and they all emerged locally in Sichuan. One form (functioning) is that these groups still don't have the concept of "NGO" in mind, and function more like informal volunteer teams. They still would think of themselves simply participating in volunteer activities. Another form is...those did function as formal NGOs would hope the 'indigenous power' would arise once they are gone. Maybe they intentionally trained some of the local key participants to establish some of these groups/organizations. These type of situations has occurred in large numbers especially after the earthquake. (SG3-01-08[48])

One other actor in the second category that I would like to pay particular attention here is #49. Note that like actor #3, it came into existence right after the earthquake. During the emergency response period, 19% of the remaining actors reached out to actor

[48] For original Chinese script please refer to Appendix 4.4.25.

#49 to establish communication relationships. The percentage climbed up to 21.2% during the recovery stage.

The Case of Actor #49 (NGO49-01)

Like actor #3, actor #49 also emerged as a self-organizing civil society entity after the earthquake. Here, I focus on the characteristics of its individual action and motivations in the self-organization process, or in other words, how the respondent lived through his experience of the organization's initial formation. Although the formal establishment date of this NGO as a formal institutional entity can be traced back to 2008 after the earthquake event in May that year, it had actually been three years before the happening of the disaster that the original group came into functioning related to "civil society" practices. Here, the organizer's usages of two term phrases were worth noticing. One was that he specifically referred the entity as a "team" or "group" before its formal establishment as an "NGO" after the earthquake. This meant that the respondent was consciously aware of and distinguished the issue of formality. Secondly, the usage of the term "civil society" when referring to the organization's work practices signified the respondent's awareness of the concept and his willingness to identify both the "group"

and the "organizational" practices as belonging towards a larger domain called "civil society". The specific ways of how the "civil society" concept was understood in this context was further revealed throughout the development of the respondent's actions and motivations throughout the emergency response and recovery stages.

Several characteristics can be depicted in terms of how the initial actions taken that would eventually lead to the emergence of the organizational actor #49 during the emergency response stage. First of all, the primary initiatives for the self-organization process were collectively taken by the actions of about one hundred "Chinese domestic NGOs" during the first moments after the disaster. The organizer himself (NGO49-01) was "elected" as the lead coordinator at the newly established "joint office" across the groups and organizations came into the Sichuan Province participating in the emergency response. The initial decision-making process regarding the functions of the "joint-office" as a whole was made collectively among the participating civil society actors. Just within the timeframe of a few days, it was decided that the functioning of the organization would involve actions of "specific rescue operations" during the emergency response period. These activities included the distribution of the disaster relief supplies and the transportation of volunteers. The following account illustrates the specific actions taken among the individual participants of the "joint-office":

> At that time, the joint office had its own division of labor, and on my part, I would mainly be responsible for fund-raising and managing daily affairs. For example, the coordination of our transportation team and the investigation team, and raising the material resources in our warehouse would be my responsibility. There were also sub-teams, and every team would have its own duties, some were in charge of gathering the updated information in the disaster impacted areas, some were responsible for other types of information. And according to their information, we would send the needed people, resources, and the transportation vehicles to the proper location. So these were basically what happened during the emergency response stage until the 30th of May. By then, the works of the joint office was completed. Afterwards, my thoughts were…because so many of the civil society groups/organizations participated in the emergency response activities, and the disaster recovery stage after the emergence response should be a very long term process, also according the experiences from Japan and Taiwan. So this is why I decided to stay and continue doing long term disaster recovery-related services. And afterwards, we thought about moving our headquarter to Chengdu and change our name as well. (NGO49-01-01[49])

Thus, during the emergency response stage, self-organizing actions basically can be characterized by a differentiation of duties being performed by sub-groups of participants. The particular role of the organizer (NGO49-01) was one that focused on general coordination, administrative duties, and fund-raising. The end of May in 2008 marked as a change point for the "joint-office" to make its transition from performing emergency response related actions towards short-term as well as long term recovery actions. This led to the discovery of the third trait of the self-organizing process. The organizer's awareness of the importance of disaster recovery phase and his perception of the

[49] For original Chinese script please refer to Appendix 4.4.26.

functioning capability of all other participating civil society groups/organizations played a critical role in the institutional transition of the actor #49. Drawing from the experiences of Japan and Taiwan, he first understood that the disaster recovery phase could involve actions that are intended to be long term. Then, the action taken exemplifying the organizational actor's further commitment to the field of practices was reflected in the respondent's decision to relocate the original functioning headquarters to Chengdu, Sichuan, and also in the process of changing its title afterwards in order to commemorate the rise of the "joint-office" after the catastrophic disaster event. As a result, the organization under the new name was formally established on June 1, 2008[50].

Therefore, when it comes to the initial drive in his initial participation in the voluntary activities and establishing the organization, the younger informant of SG03-01, NGO49-01 showed similar type of awareness in being able to be involved in something more "meaningful" when compared to the daily tasks that he had to perform back at work in the government. At the same time, they also recognized a force that empowered them through the joint actions of participating in the disaster response and recovery among many of his peers.

[50] Refer to Appendix 4-Case49-1 for more detailed accounts.

> I don't feel like there is much future when working for the government…our organization has a couple of us who are like me, three of them worked for the government for many years. All of them resigned after getting their deputy secretary title. They just didn't see much future when working there…didn't feel like doing anything meaningful…we feel what we are doing now is a much more meaningful and interesting one, so we chose this one. We also have a lawyer, he has seven to eight years of working experiences. So that's why the structure of our team is also an interesting one. (NGO49-01-02[51])

Aside from the emergence of new actors such as #3 and #49 and their rising up to occupy some of the influential positions in the first two categories, they were followed by actors #1, #51, #2, and #27. Note that #1, #51, and #27 were all among those with higher in-degree measures for period before the earthquake. At the emergency response stage after the disaster, they remained trustworthy communication partners from other actors' perspective. Actor #1 is the state aggregate and it was consistently perceived as a "go-to" source of information for these two periods. The percentage of civil society actors in the network that reached out to it almost tripled after the earthquake.

The perception of nonprofit actors reflected by their choices of action is one thing, the other side of the story is the policy implications for the various government agencies in the state and their response upon receiving the information requests and communication outreaches from civil society actors shortly after a disaster. In social

[51] For original Chinese script please refer to Appendix 4.4.27.

network analysis, an initiation of a tie from one actor to another can be interpreted as the former regarding the latter of such a high value so that the latter was chosen to be contacted among all the other possible choices in the network. Establishing a new tie, from any actor's point of view, will cost the initiating actor's time and resources while the actor itself has to bear the risk of being rejected or the "interest" not being reciprocated from the other party. Therefore, the fact that the state actor was contacted by consistently higher percentage of actors in the network over time meant that the government branches indeed played an important role in the changes of "lives" of civil society actors. Within the context of this research, I would argue that the mere existence of a tie between two actors, is a form of "power" executed by parties on both sides of the picture. On the initiation end, the power comes from the actor's ability to choose from all other possible opportunities that it possesses at the time. In other words, the sheer existence of an abundance of connection directions for the actor to act upon based on its own intentions and goals can be interpreted as one form of agency power for actors that focus on building ties. On the receiving end, the power not only comes from the acceptance and recognition of others but also from it is actually being reached out to through others' actions. The usual interpretation of this kind of power is that the actors on the receiving end must already possess certain reputation, resources, or positional status

that the other party would perceive as useful. This indeed could be the case for the state actor. But in this study, I have already illustrated that this did not necessarily have to be the case. Actors such as #3 and #49 certainly did not possess these achieved statuses at the time when they established themselves right after the earthquake. But what they did have was a drive that motivated them to serve for those in need at the time of crisis and they acted upon it in the form of establishing new relationships towards others. And these agency actions were being reciprocated by others at the same time. Therefore, "power", on this end represented an act of being empowered.

Therefore, at the same time that the government is trying to respond to the actions of nonprofit actions or informal social groups, it needs to take into consideration of the power on both sides. This means considering not just its own position by counting the number of incoming ties, but also pursuing the motivations and meanings for those actors who sent out those ties. This is critical because how its own action changes will also alternate the structure of the social environment that the civil society actors are embedded in and such changes will have an impact on how their behavior changes over time.

The Rise of Domestic Civil Society Organizations (Category #3)

Looking at the third category in the emergency response period, it is apparent that actors #109 and #125 became the two other newly emerged "prominent members" among all others in the same category. By "newly emerged", I mean that the two actors did not receive as many nominations as the ones discussed in the period before the earthquake. Actor #109 was being nominated by 2.2% of the remaining others for the first period and during the emergency response stage, the percentage climbed up to 11.7%, which was more than five times from the previous stage. This level of nomination rate came down slightly to 10.2% during the recovery stage. Observing its out-degree activities for the three time periods, the actor went from a non-initiator of any ties before the earthquake to one that established contacts with 15.3% of the actors after the disaster. And its level of outreach remained exactly the same for the long term recovery stage. Overall, actor #109 was an "information sink" before the disaster happened. Initially, there were other actors reaching out towards it but the actor did not send out any information. But its agency action was triggered by the earthquake event during the emergency response period. The actor's level of agency as a tie establisher overcame its receiving nominations for both the short term and the long term after the earthquake. This showed the primary tendency for the actor to be an agent of change in the structure of the network.

The difference between actor #125 and the others that I have thus covered so far is that it is a Chinese domestic foundation with a particular focus in disaster relief and assisting the development of nonprofit actors in China. The foundation was first established in 2007 and in year 2010, it became the first formally registered independent foundation that can raise its own funds from the general public in mainland China. Based on this specific characteristic of the actor, the communication ties that were being named towards it not only suggested an interest of other actors to exchange information with it but also their interests in seeking the opportunity to be funded by actor #125. With this additional piece of interpretation, let's look at how behaviors toward this actor change over time. Before the earthquake, only one actor in the entire network sought to connect with the foundation. But during the emergency response period, the extensiveness of its incoming nominations went up to 11.7% and the level stayed the same over the long term recovery stage. In this case, the earthquake did trigger a wave of recognition from others in the network and this was most likely due to the fact that there was not only a surge the number of newly emerging civil society groups but also an insurgence of the need to seek funding as these groups develop over time. In other words, the level of in-degree for this type of funding-oriented actors can be seen as an approximate indicator of the development of grass roots civil society actors in China. The indication for this study is

that on the one hand, civil society actors in general were becoming more active after the earthquake by looking directly at their out-degree activities. On the other hand, an indirect way is to observe the change in the number of in-degree for actors that had functioned as foundations. An increase in ties that were established towards a Chinese domestic foundation formally registered to have the lawful status to raise funds from the general public, can be a sign indicating a growing number of grass-roots groups/organizations not only emerged at the time but also were aware of seeking to be sustainable over the long term.

Expansion of Empowerment (Category #4 and #5)

In the fourth category, one actor worth paying attention to is #100. Recall that it was an active relationship initiator throughout the three time periods. But it had relatively few incoming nominations before the earthquake. After the disaster, along with its increasing outreach activities, the actor's in-degree level went from 4.4% to 8.8%. For the long term recovery, its nomination dropped to 5.1%. While the behavior of others in the network was fluctuating towards communicating with this actor, it maintained its

agency action level by kept establishing connections with others both before and after the disaster.

In the last category, actors #122, #123, #15, and #34 started out to be increasingly recognized by the rest of the network actors during the emergency response period. Among them, actors #123 and #34 were newly established grassroots nonprofits after the earthquake. Actor #123 was organized by a few volunteers who participated in the emergency response activities and decided to stay active in the social recovery process for people in the disaster impacted areas. Its incoming communication ties were initiated by 8% of the remaining others in the network during emergency stage and the percentage went up to 10.9% over the long term recovery. In other words, the actor was being recognized and contacted by a growing number of other civil society actors in the network over time. Examining its out-degree activities, it reached out to 21.2% of others since its establishment after the earthquake, and this was one of the highest among others at the same period of time. Over the recovery stage, the level of outreach dropped by a few percentages to 19%. But in general, the actor sustained its efforts in being an active agent for relationship building over time.

Like actor #123, actor #34 was also a newly formed social group established in response to the earthquake. The participants were composed of Chinese citizens who committed themselves to activities related to long term earthquake recovery in the area and one of the main guiding purposes of their actions was to serve both the urban and rural communities thus contributing to the sustainable development in the region. It was formally registered in the business category and participated in activities such as environmental protection and livelihood support during the period of long term recovery. During the emergency response stage, the actor received nomination from 8% of the remaining actors and this percentage remained at the exactly same level for the long term recovery stage. Compared to #123, actor #34 was more active in building ties right after the earthquake. Its outgoing connections expanded to 65% of the actors in the network at the emergency stage, showing its eagerness to communicate with others and sharing information. However, this level of agency activity did not maintain over time as the number slipped down to 7.3% during the recovery stage. Therefore, we can say that the earthquake indeed triggered a significant sense of agency and prompted it to drastically expand its outreach activity during the short-term period after the disaster. However, the "agency" interpreted in terms of the out-degree measure was not sustained over time.

Although some actors' overall agency experienced great fluctuations over time, such as the incidence pertaining to actor #34, it is still early to say whether the actor's role was indeed being transformed over the long term by the disaster event. This is because the measures of in-degree and out-degree are just two of the many kinds of network measures that are available to depict the varying roles and institutionalization characteristics that actors may possess. Later on in the analysis, I will illustrate other types of these measurements to look at the different sides of the processes behind the actors' actions. In these instances, the concept of "agency" can have various meanings. For the case of actor #34, as its actions to connect came down significantly during the recovery stage, it is also important to look at to whom the actor was connected to and their positions when taking into account of the whole network structure. Sometimes, getting connected to the "right" actor may be more important than knowing many of the "isolated" actors who themselves were not well connected in the network.

Post-earthquake Status of Influence (Recovery)

In this last section of discussing the in-degree connections, I chose to discuss the actors that were neither among the top in receiving nominations during the pre-

earthquake stage nor during the emergency response stage. It is important to look at these "late-comers" during the recovery period two reasons. One is because they could be newly emerged grassroots groups to participate in the disaster response and were able to maintain existence in the long term. The other reason is that it could take a long time before a grassroots group develop and become active in the field and finally gets recognized from others in the network. Examining the characteristics of these "late-comers" can help the analysis draw some inferences on how the origins of structural change came into being, especially in regard to agency actions. Table 4.13 illustrates the five categories of actors who held higher level of in-degree over the long term recovery period. The categories were created in a ranking order from those with high in-degree to lower in-degree[52].

[52] The actors in the parenthesis are the ones with same level of in-degree.

Table 4.13. Communication Structural Endurance (Recovery Incoming Nomination Action)

	Actor Identifier	Incoming Tie Intensity
Category 1	#3, #1	33, 30
Category 2	#49, #51, #27, (#24, #38)	29, 28, 23, 22
Category 3	#2, (#134, #50), (#118, #25, #14),(#12, #125, #137,#37)	19, 18, 17, 16
Category 4	(#123, #33, #61), (#109, #119)	15, 14
Category 5	(#135, #76), (#110, #19, #5, #71)	13, 12

Capability Formation

At this stage of long term recovery, note that actors #3, #49, #123, and #109, who received high levels of nominations immediately after the disaster, maintained to have relatively higher levels of nominations from other civil society actors in the network. And among them, #3, #49, and #123 were all grassroots groups established only after the earthquake. They remained to play an influential role in the network by continually ranking ahead of the state actor and other long-established nonprofit organizations. This piece of evidence signified the extensiveness of the influential capability of nonprofit groups that were formed by Chinese citizens themselves. The fact that these groups were able to attract a consistently high number of connection initiatives from others in the network suggested that "power" can emerge from dimensions other than the ones people

are most familiar and attached to, such as in terms of money, position, status, and tenure-ship. “Power” can also be interpreted within the dimension of motivations and drives which can be manifested through network behaviors observed over time. To put it in another way, the sustainability of the high level of in-degree for these newly emerged actors is a form of power that further builds up the capability formation process first being initiated immediately after the earthquake. On the one hand, the capability functionings in terms of having the availability channels in communicating with others was driven by agency action revealed through out-degree measures. On the other hand, the ability for actors to sustain and the possibly expand the capability functionings was empowered by the acceptance and trust from others, which can be measured through in-degree. Agency action and the formation of status of prominence work together to set the stage for further expansion of actors’ capability set. This line of argument emphasizes on the indirectness of the execution of power and a sense of sustainability from the perspective of civil society actors.

"Late-comer" Emergence

In the third category of the table 4.13, we can see that the level of incoming nominations of actor #12 got a tie with #125, #137, and #37. The last three actors also received relatively higher levels of incoming connections during the emergency response period. The difference between #12 and the rest of the actors in the whole category lies in the fact that it was the only actor that came into being after the earthquake and was organized by the initiative of a group of ordinary Chinese citizens in response to the earthquake. It was established in May 2008, just three days after the Wenchuan earthquake. From a group of temporary volunteers coming together to help the disaster response, the members later engaged themselves in the long term recovery and development of a region that was severely destructed by the earthquake. The actor itself also became the first registered grassroots nonprofit organization in the entire region where it was active. During the recovery stage, the actor participated in activities such as helping women and children, psychological counseling, and the livelihood support for the earthquake-impacted communities. Since the initiation of its operation, the actor attracted ties from 5.1% of the network during the emergency response stage. And its nominations doubled during the long term recovery with the percentage climbing up to 11.7% of the remaining actors. Looking through its outgoing connection activities, the actor had only

one tie-initiating act during the emergency response stage. But over time, it expanded its communication partners to 23.4% of others in the network. As others started to recognize the actor and reached out towards it, its own agency activities also started to grow in number. Unlike the trend for some of the other actors whose incoming ties and outgoing ties experienced significant "jumps" immediately after the earthquake and then tended to go down once into the longer term, the changes in measures of in-degree and out-degree for actor #12 signified that it is possible for emerging grassroots groups to experience a type of "lagged" growth especially in their tendency to launch agency activities. What can be inferred is that on the one hand, a disaster event can trigger immediate grassroots voluntary actions among citizens and the behaviors can be reflected through the focal actors' outreach activities and incoming nominations. On the other hand, the long term recovery stage should not be ignored when considering the starting point of a type of latent agency that signifies the emergence of sustainability for social structures, thus the initiation of an institutionalization process.

Moving on to categories 4 and 5 in the table, we find that actor #123, the nonprofit group established after the earthquake, occupied a leading position among all others. Except actor #33, all others in category 4 had relatively high number of nominations towards them in the previous emergency response period. In category 5,

actors #135, #76, #5, #71 availed in receiving more ties as compared to the period of emergency response. Among these emerging new actors during recovery stage, actors #135 and #76 were the only two actors who responded to the survey and thus had both incoming and outgoing ties. Actor #135, a social worker station established by inter-university collaboration initiatives between mainland China and Hong Kong, had its outgoing ties going up from 27.7% to 45.3% during the two periods after the earthquake. At the same time, its nominations increased from 4.4% to 9.5% for emergency and recovery stages respectively. It indeed exhibited traits of an active agent in building new connections rather than an "information sink".

Like actors #3, #49, #123, actor #76 is another "home-grown" Chinese social group established in response to the earthquake. It particularly aims to assist the livelihood and capability-building of local ethnic minority women whose lives were significantly affected by the disaster. Upon until 2011, the group had not been formally registered. But its institutional status did not seem to affect the high level of its incoming and outgoing ties through the periods after the earthquake. The actor was reached out to by 5.1% of others in the network at the emergency response stage, and the percentage expanded to 9.5% over the recovery stage. For its actions in establishing relationships to others, the actor reached out to 9.5% of the remaining others during emergency response,

and the number jumped to 23.4% during the long term recovery period. Therefore, how the others in the network behave towards this focal actor and how its own outreach behavior changes are relatively similar to that of actor #12. The peak of their agency initiative was "delayed" towards the long term recovery stage rather than immediately after the disaster. And their agency actions were further empowered and supported by the increasing acceptance from others over time.

The primary findings in investigating actor in-degree and out-degree network measures indicated that the newly emerging grassroots groups, such as #3, #12, #123, and #76, can show an increasing strength of their agency in communication outreach all the way into the disaster recovery stage and the level of their network expansion can experience upward "jumps" during the long term period as well. This contradicts two types of popular claims regarding the role of civil society after a disaster. One type of claim is that the disaster event will create a "window of opportunity" for actors who are trying to make a change to the system, and once this short time frame of opportunity passes by over time, not so much change can be made to be sustainable to create any institutional change of the structure. From the results of the current analysis, I argue that within the context of looking at the newly emerged Chinese civil society actors, the start timing for creating opportunities for structural change in their social environments can

occur long after the significant event. Another type of claim states that after the initial surge of the volunteerism immediately after the earthquake in China, the sustainability of the grassroots efforts becomes questionable. The results analyzed in this section showed that for certain Chinese grassroots actors, not only were they able to build their strength by expanding their outreach network all the way into the long term recovery stage, their capability of functioning were also actively being supported by others through information-seeking behaviors toward the focal actors, especially into the later stages of recovery.

Summary

With this, I conclude the discussion on the out-degree and in-degree measures from the univariate statistical outputs for communication networks. I generally focused on exploring the characteristics of the actors whose level of incoming and outgoing ties ranked themselves relatively higher than others in the network.

From the analysis thus illustrated, two themes can be derived regarding change in Chinese civil society after the Wenchuan earthquake. First, at the actor level, evidences of the preceding action and behavioral conditions that lead to institutional formation

characterized by group/organization internal generations were found. They were illustrated by the persistence and sustenance of agency actions of the newly emerged civil society actors after the earthquake. These grassroots actors not only maintained to be highly active in reaching out to others long term after the disaster event but also were being consistently perceived to be important sources of information and sought out by others at the same time. The persistence or duration of the outgoing and incoming ties of these actors demonstrated their primary forms of institutionalization. Secondly, by going through the categorization of the level of actor out-degree and in-degree activities comparing before and after the earthquake event, I also illustrated descriptive changes in actions and interactions occurred inside the civil society domain. Some preliminary investigations into the behavioral changes of actors over time were being delivered and the general trends in agency initiatives were being summarized based on comparisons of degree measures across time periods. In the next section, I will go further into the analysis to look at the more concrete measures of the structural dynamics within the civil society domain.

One lesson to be learned in future network data collection procedures is the need for clear specification of how an actor may be defined as a formal organization or an informal social group. In the Chinese disaster recovery case, the “date of establishment”,

in certain incidences, was reported as the day the actors gained formal registration status. But discrepancies occurred when actors in this category still named communication partners even before the day of their official existence. This suggests that the original questionnaire can be improved by defining the establishment day as when participants in a group/organization first came to Sichuan and started working collectively without having the registered status. This way, the data will be able to capture more nuanced connections among actors and make more accurate descriptions on the origin of actions.

Chapter 5

Enduring Civil Society: Sustainability of Actions

(Part I)

Communication and Persistence of Agency Action

Cohesion

Structuration of Solidarity

In this Chapter, I focus on an in-depth analysis of the social structuration process of communication and collaboration networks by comparing the periods before and after the Wenchuan Earthquake. I began by discussing the immediate "neighborhood" structures of the more active and influential actors. Then, I expand the horizon to examine the overall inclusiveness of the two types of networks over time. Such characteristics of the general cohesion were revealed in the density measures by calculating the percentage of all the possible ties that are actually present. The patterns of connection revealed that the social structures of the communication and collaboration

relationships were both being significantly altered by the agency orientation of actors seeking connections with others shortly after the earthquake.

From a general examination conducted in the previous Chapter, as actors became increasingly connected to one another through direct and indirect ties, both types of networks became denser. Over the long term, the agency structure also illustrated signs of being institutionalized with increased numbers of project collaboration ties. Comparing across the two network types, the communication network did appear to have more solidarity than the collaboration network both before and after the disaster. This means that actors were being embedded in a more "tightly knit together" kind of inter-relationships when sharing information and communicating with each other. Contrastingly, the ties for collaboration were "sparsely knit together". Such a difference was expected because the required commitment for collaborating in projects operations involves a deeper level of motivation, dedication, and capacity for actors' professional growth.

In the first part of this Chapter, I delve further into the network structures to particularly investigate the emergence and development of communication networks. The different ways of network embeddedness can represent both opportunities and constraints

for the focal actor. And one also needs to be aware of the different types of relationship environments, such as the distinguished features of communication and collaboration networks. In this section, I am primarily concerned with the communication or information exchange relationships because of the likely changes in action intensity immediately and in the long run after the disaster event. Compared to the structural changes in collaboration, the communication networks experienced a full integration of actor connectedness immediately after the earthquake and maintained the overall connection through the longer term. (See figure 4.3*A* and 4.3*B*). Therefore, examining the structural features of how such integrated-ness came into being becomes an important step in understanding the development of Chinese civil society in times of a catastrophic disaster.

A basic measure that I used to analyze actors' connectedness considering the network as a whole is called *distance*. It is a concept that embodies a variety of ways to examine how one actor can reach out to another and represent the different channels that information can flow among agents or mediums one can navigate through to find communication partners.

Creation of Efficient Communication Channels

In network analysis, two nodes (or two actors) may be directly connected by a tie/line or indirectly connected by ties/lines. The sequence of such lines connecting two actors is called a "walk". And a walk by which each node and each line are distinct is called a "path". So, the "length" of a path is defined by the number of lines or "steps" that it takes to get from one actor to another. For network with directions like the ones in this research context, there might be multiple information exchange paths from actor A to actor B, but it is possible that B cannot reach A. Moreover, the length for these multiple paths from one actor to another will vary. For example, as shown in figure 5.1.1, there can be five distinct ways for actor D to reach actor A.

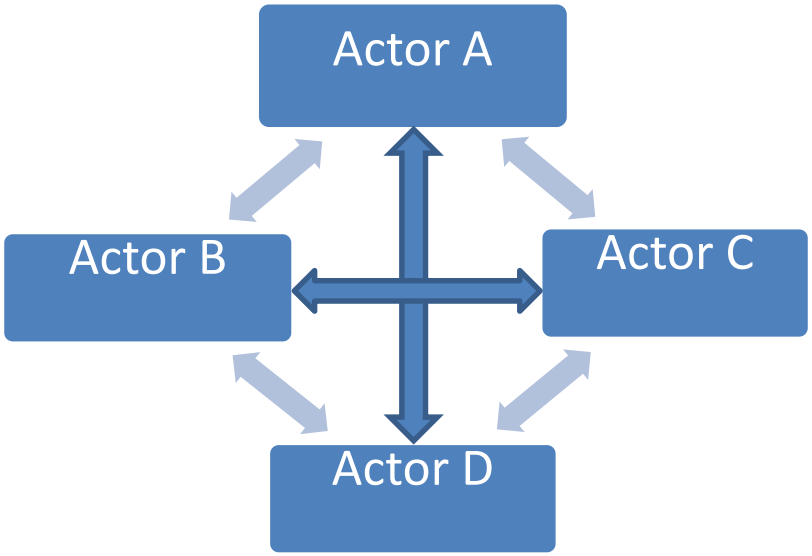


Figure 5.1.1. Illustration of Communication Channels

In graphic terms, these five paths from actor D to actor A are: DA at length 1, DBA at length 2, DCA at length 2, DBCA at length 3, and DCBA at length 3. The geodesic distance, however, is the length of the shortest path between A and D. And that is when actor D reaches actor A directly. Therefore, the calculation of *geodesic distance* only considers the length of the shortest path between two actors. Thus, I chose it to represent the efficient communication channels that the focal actors established.

The efficiency consideration of the shortest path length among actors is particularly important for understanding communication networks in the case of disaster response and recovery. During the emergency response period, when there is a time sensitivity factor that has to be taken into account, reaching out directly to the targeted information source will most likely to be the most time and resource-saving strategy for actors who initiate communication relationships. As the number of information sources with shorter geodesic distance increases in the neighborhood of the focal actor, the more opportunities the actor will have to either sending out information to others or reaching out to receive the requested information from others. Starting with this understanding of the basic concepts, I examine the network analysis results of geodesic distance counts for the three time periods before and after the earthquake.

Pre-Earthquake

For the period before the earthquake shown in Table 5.1.1, the largest geodesic distance found is at length 6.

Table 5.1.1. Efficient Communication Paths Distribution (Pre-earthquake)

Geodesic Distance	Length 1	Length 2	Length 3	Length 4	Length 5	Length 6
Frequency	230	473	417	137	26	6
Proportion	0.178	0.367	0.324	0.106	0.020	0.005

This means that there were actors in the network whose shortest path connection between them was at length 6. It will take 6 steps and 5 intermediary actors before information can flow from one actor to another. Note that there were 6 incidences when such extended distance appeared in the communication network. The majority of the actors could reach out to the others within 2 to 3 path length, with one or two medium actors in between. Looking at the "proportion" figures, 36.7% of the geodesic distances were at length 2 and 32.4% were at length 3. Those actors who can be connected by one path length appeared in 230 incidences, which counted as 17.8% of the total geodesic distance cases. Overall, the communication network before the earthquake can be said to be rather extended and

sparse. Information cannot travel quickly enough as most of the shortest connections between two actors were mediated by one or two other actors in the network. The more the number of such intermediaries, the more time it will take for information to pass through towards its targeted destination. The result also revealed that the network is not fully connected as there were pairs of actors not "reachable" to each other through any categories of path length.

In these disconnected cases, the geodesic distances were defined with a number that is calculated by one length greater than the largest distance in the network, which is 7 in the pre-earthquake communication relationships. This type of disconnectedness appeared across the entire network. One reason for such cases is that there were actors not in existence at this stage of time and the analysis treated them as "isolates" being disconnected from those in the connected network.

Emergency Response

Compared to the pre-earthquake period, the emergency response network became more compacted as the largest geodesic distance found was at path length of 4, which is 2 length fewer than the earlier stage (see table 5.1.2).

Table 5.1.2. Efficient Communication Paths Distribution (Emergency Response)

Geodesic Distance	Length 1	Length 2	Length 3	Length 4
Frequency	1028	3902	1544	107
Proportion	0.156	0.593	0.235	0.016

This is one piece of evidence because showing that actors at this time could reach out to others faster, if needed, with less mediation of other actors in between. As a result, this network did evolve in such a way that the overall structure facilitated the information flow, which was actually needed for the short term response period. One point worth noticing as the communication network evolved from the first stage to second stage was the intensiveness of how new actors were being integrated into the whole network. Note that as new groups and organizations emerged during the period of disaster response, the network experienced "contraction" pulling these actors into further connectedness. From the previous analysis in tracing the origin of such a process, such contraction force can be enacted by the agency actions of civil society actors, particularly the newly emerged ones.

The longer path length of 5 and 6 disappeared altogether during this period. This is an important signal of the behavioral response on the part of civil society actors. The

tendency for structural cohesiveness and solidarity enacted by the agency initiative of actors immediately after the disaster event overcame the dispersive tensions exhibited in the period before the earthquake. The frequencies of each category of geodesic distances also corresponded to the increasing density of the emergency network. The number of geodesic distance at path length of 2 "jumped" from 473 to 3902, still being the dominating connection distance during this stage. To put it proportionally, 59.3% of the distances "traveled" for information sharing were of path length of 2. This means that the majority of the information can be reached from the initiating actor to the targeted actor with one facilitating actor in between. This process was accompanied by a decrease in the percentage of path length at 3 from 32.4% to 23.5%. Finally, the quantity of direct connections at length 1 increased nearly five-folds from 230 to 1028. But the proportion went down from 17.8% to 15.6%. This was an indication that actors were still not quite aware of the existence of others in the network and this was possible because of the mass emergence of new actors over such a short period of time after the earthquake. However, such dynamic was being compensated by the increasing incidences when actors were being able to connect indirectly through one other "facilitator".

Recovery

By the long term recovery period, the whole communication structure became even more cohesive when the maximum path length went down to 3 (see table 5.1.3).

Table 5.1.3. Communication Efficient Paths Distribution (Long-term Recovery)

Geodesic Distance	Length 1	Length 2	Length 3
Frequency	1193	4574	812
Proportion	0.181	0.695	0.123

The communication network became increasingly tightly knitted together and information flowed faster between two actors than any other previous periods. The quantity of the most efficient communication paths at both length 1 and length 2 increased further. The connections that needed one mediator between two actors went up from 3902 to 4574, and almost 70% of all the lengths among the three categories of distances fell into path length of 2. Over time, the agency actions did bring actors closer to each other to exchange information, when the proportion of those who could be connected directly increased from 15.6% during emergency response period to 18.1%. Note that this figure was higher than that of the period before the earthquake. This demonstrated that in the long run, the opportunities for actors directly reaching out to

others steadily climbed up. Overall, two factors provided primary evidences showing that the communication structure after the earthquake not only became inclusive but also denser. One is the decreased proportion of those connections that needed two intermediaries. The other is the further increase in the percentage of direct connections. The actors became more embedded in the direct relationships with one another and had more efficient communication channels to pass information through to another.

From the whole network point of view, the table 5.1.4 below confirms the process of the increasing solidarity of the communication network.

Table 5.1.4. Combined Geodesic Distance Results (Communication Network)

	Average Distance	Distance-based Cohesion	Diameter
t1	2.437	0.034	6
t2	2.111	0.186	4
t3	1.942	0.198	3

First of all, as a general trend, we can see that the *average distance* among actors decreased from 2.437 before the earthquake to 1.942 during the recovery stage. In general, the communication network evolved in such a way that actors were more intertwined with each other and information flow became more unobstructed by mediators. More direct exchange of information and contacts were possible. As there were more

connections with shorter geodesic distances, the opportunities to reach out to others and to be known by others increased. This further promoted a sense of solidarity among the actors in the network and the measure of "distance-based cohesion" appeared in table 5.1.4 captured such feature of "compactness[53]". During the period before the earthquake, such cohesion of the communication network was 0.034. The value of this measure can be between 0 (entirely disconnected network) to 1 (everyone is adjacent to each other). Therefore, the larger values can be interpreted as the greater the cohesiveness of the network. This is exhibited through the incremental changes from the period shortly after the disaster to long term recovery, with measures went up to 0.186 and eventually to 0.198[54].

Emerging Network Boundary

The increasing compactness of the communication networks can be further elaborated through the concept of *diameter*, which is defined as the largest geodesic distance in the connected network. The changes of this measure were illustrated in the last column of table 5.1.4. Before the earthquake, the longest distance one actor can reach

[53] In UCINET, it is calculated by the normalized sum of the reciprocal of all the distances.

[54] For complete output results of Geodesic Distances of communication networks, refer to Appendix 5.1*A*, 5.1*B*, 5.1*C*.

towards the other was with length 6 and this means that information has to pass through 5 different "facilitating" actors in order to get to the targeted actor on the other end. If having "efficiency" is interpreted by how much time and resource that can be saved by going through a particular path from the sources of information to the receiver, then, a network with this size of diameter will not be as facilitating for the speed of information flow as those with smaller values of diameters. But for some actors, this path length was the most efficient communication channel for them to connect with others. And the existence of such extended efficient paths for the pre-earthquake period confirmed the estrangement of the relationships among actors.

As the network became more "compacted" after the earthquake, the diameter measure decreased from length of 6 to length of 4. During this period, actors were particularly active in reaching out directly to others and as a result, the longest geodesic distance one piece of information can go through in the network is no longer 6 but 4. The number of mediums that one actor had to go through in these cases also decreased from 5 to 3. As groups and organizations actively chose to stay devoted in the field, the long term recovery period continued building up the strength of actors' connection as they became more acquainted and familiar with each other. Communication channels were no longer dependent on as many extended "routes" of intermediaries as that of the

emergency response period. More shortened efficient information exchange paths became available to actors as their agency freedom was being activated by a drive to contribute to the long term social development and building up a Chinese civil society at the group and organization level.

This resulted in further decreased diameter from path length of 4 to path length of 3. There were 12.3% of the geodesic distances fell into this category at this stage and pieces of information only needed to go through two medium actors. In other words, within the communication network, no actor was more than 3 steps away from any other actor. If efficiency of information transfer from one side of the network to the other is of primary concern, then, an upper bound of three steps exhibited in the recovery stage will be of advantage to that from the previous two periods.

Capability Set Formation[55]

The geodesic distances and the diameter measures matter when considering the efficiency of information flow across the network as a whole. However, when bringing the focus down to each actor and looking at opportunities and constraints on an actor-by-

[55] Please see Appendix 5.1*D*, 5.1*E*, 5.1*F* for sample UCINET Output of "Number of Geodesic paths" matrices.

actor basis, it is not the length of the distance but the total availability of the different geodesic paths from one actor to another that renders importance. In other words, the existence of the variety of ways of connecting is of significance in this case. The ability of the focal actor to get pieces of information through the network essentially depended on the availability of these different channels of communicating with others. I call these paths the capability set for one actor to efficiently conduct information exchange in a structural environment. Amartya Sen (1992) originally brought forth the idea of "capability set" as a conceptual tool to reflect on agency freedom for a person to "choose from possible livings" (40). Along this line of thinking, the capability set, in this research context, can be defined as all of the various combinations of communication (or collaboration) channels available to an actor (at the group/organizational level) for it to function in a structural context understood in terms of different social network environments.

Take figure 5.1.2 for example, if actor D did not know the existence of actor A in the first place (when the arrow in color yellow was non-existent), there would be two geodesic paths that it can take to reach or to get to know A.

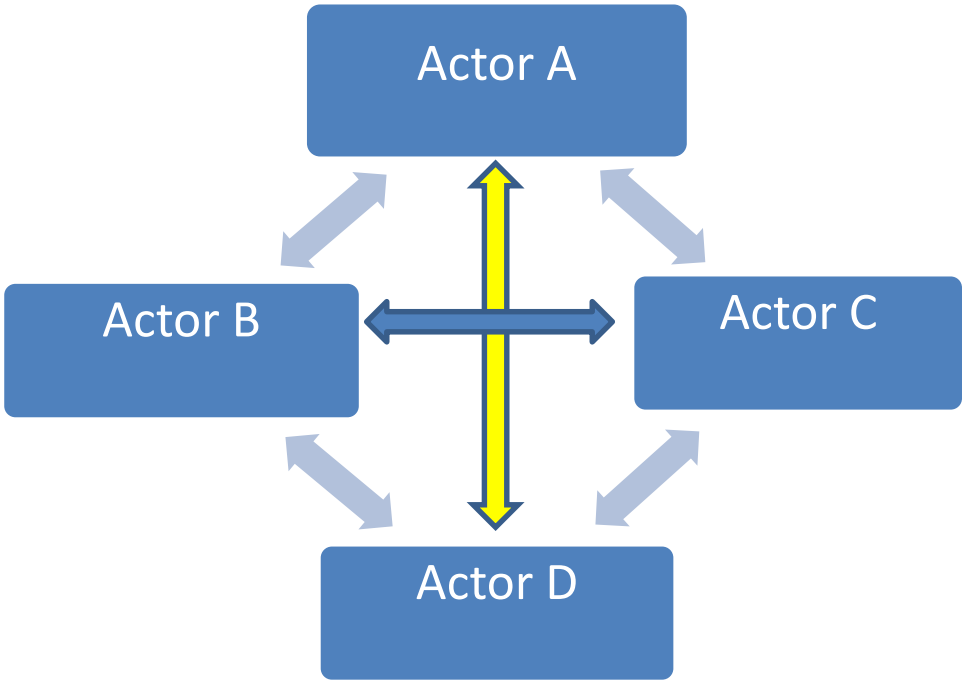


Figure 5.1.2. Illustration of Efficient Communication Channels

One is the route to reach out to actor B and the other is to reach actor C as treating them as mediators. Both directions can get information signals from actor A to actor D in two steps. If the characteristics or traits of B and C are not taken into account, the two paths can be considered equally efficient in connecting actors A and D. But civil society actors in this research context were indeed different in their attributes and thus behavior of embeddedness in the network. For example, actor B can be a grassroots organization in existence before the earthquake while actor C being another newly emerged social group like actor D during the emergency response period. It is therefore possible that actor B could have developed a rather longer term relationship with actor A than that of actor C.

This will put actor B in a favorable position in improving the odds of passing the information signals on to actor A. Therefore, from actor D's point of view, it would be better to have multiple such efficient paths in its immediate "neighborhood" so that its "voice" can be easily and correctly heard by the intended targeted recipient.

The number of geodesic paths is implemented to perform such task of detecting "efficient" paths in particular actor's neighborhood. Looking across the output matrix for the period before the earthquake shown in Appendix 5.1*D*, it can be concluded that information channels were easily interrupted by observing the large number of cells consist of zeros between pairs of actors. The occurrence of zeros in the matrix tables meant that the corresponding pair of actors would not be able to reach each other and information flow will easily break down. Also, most of the pairs of actors had only one or two available shortest paths to connect with each other, with the exception of a few actors who had higher number of alternatives. From the perspective of choice availability, or capability set formation, this pre-earthquake communication structure imposed more constraints on actors because in order to pass information efficiently on to the other, most of actors were either disconnected from others or only had one shortest path to reach out. The limitation on the actors' part comes from the fact that their intentions in getting the information flow quickly were stringently dependent on the action or characteristic of the

other actor. There were no alternative choices available for information to pass on through the rest of the network if the current route did not turn out to be successful in getting the information through. In other words, the alternative efficient ways for connection among pairs of actors were extremely restricted.

The increased intensity of agency actions during the short term after the earthquake changed the structural patterns toward opening up more alternative opportunities for pairs of actors to be able to reach out one another. Observing across the matrix output for this period of time (see Appendix 5.1*E*), not only there were less disconnected pairs with zero shortest path length, the number of available alternative efficient routes also increased for pairs of actors across the network. Take actor #134 for example, the number of geodesic paths to reach out to certain other actors increased from 0 to 23 at the maximum. What this meant was that compared to the connections in the previous period, information flow at this stage was much less likely to encounter disruptions and more actor had the choice to choose from alternative efficient channels to send out or receive information if one route did not work out.

The long term recovery period continued such a trend while the network as a whole is becoming more compact (see Appendix 5.1*F*). Considering across before and

after the earthquake, the number of efficient communication paths for actor #123 toward other civil society actors exemplified sustained incremental changes. As soon as it was first established during the emergency response stage, the maximum number of efficient paths for it to reach out to others was at level 5. The maximum efficient paths of this actor increased to 32 for the recovery time, which made it having the most alternative communication route toward another civil society actor at this period of time. Therefore, it is now necessary to explore the source of its institutional emergence for this actor to look for the motivations and origin of change in terms of its increased capability to pass information through variety of channels.

The Case of Actor #123 (SG123)

Throughout his experience during the emergency response period, the organizer of actor #123 (SG123-01) was provided an opportunity to work side-by-side with other volunteers and get to know those who eventually became team members of his group. His devotion to improving the psychological health for children suffered traumatic experiences after the disaster further connected him to many professionals and academics who worked in similar areas of specialization at local universities. Together, they formed

the initial structure of actor #123 as the proto-type of the later formally established social group. As for the organizer himself, it had been a long way before he finally found something, or more precisely, a career path, that he was enthusiastic and passionate about doing. Before the earthquake event, his work was related to electric engineering and for most of the time he would just conduct the activities in such a mechanical way that no human contact needed to be involved. To him, that type of work was dry and repetitive. After the disaster, having had the opportunity to meet with other volunteers to serve the need of others, the organizer finally recognized that it was in the nonprofit field that enthusiasm and devotion of work energy were triggered and maintained. “Right now, not only can I help others but also started getting to know myself as a person at the same time, which is significantly meaningful” (SG123-01). As he handed me his business card, he specifically pointed at a few words representing the guiding principle of his work: “Helping others means helping ourselves, awakening ourselves means awakening others” （助人自助，自觉觉他）. The term “awakening” in this context would represent a type of awareness within oneself in having the capability to exercise a type of freedom to assist others.

As for the group activities transitioning towards long term recovery phase, the organizer emphasized the importance of adolescent psychological health condition in the

disaster impacted areas, particularly the role of schools and families in providing this group of youth a healthy growth environment. However, one of the critical issues that the local communities still faced at the time was re-establishing their livelihood after the earthquake event. From the account of the organizer, at one time during the short term response period, it became very popular for some nonprofit groups and organizations to support the local people making and selling cross stitch products. But over time, as people's attention to the earthquake faded, the business itself also came to a halt as the products themselves made by people from the disaster areas no longer held buyers' attraction. This example illustrated the importance for nonprofit groups and organizations conducting long term recovery activities rather than just rushing into the local communities providing any kinds of assistances without closely examining and understanding the types of activities that can assist sustainable livelihood support at the local level.

One thing worth noticing from the way that the organizer described the works of nonprofit groups and organizations was in terms how he distinguished the conceptual relationships among "ordinary people", "NGOs", and the "government". From his perspective, the interaction is one that NGOs being standing out as a separate sector of

entities free from the influence from and towards the mass and the government. For example:

> NGOs cannot stand on the side of the government and speak for the government. If conflicts arise between the government and the general public, and part of cause is probably due to certain government policies. If government wants us NGOs to stand out and persuade the public on behalf of the government, we will definitely not do so. What I think the ideal situation would be one where we will have our own way of thinking, and that will be independent of the state and the mass. We won't have to lean on any sides and at same time, can encourage different parties to express their own point of views without representing any one of them. (SG123-01-01[56]; summary of account of SG123-01)

From here, we can see the organizer gradually realized the emergence of the civil society domain through distinguishing the associative activities coming out of the general mass to form NGOs and their separated-ness with the domain of the state performed by various branches of the government. Such a separation process is perceived to be characterized by NGOs' stand-alone positions particularly in its way of thinking. The description of the "ideal situation" in the functioning of NGOs in the civil society domain represented the organizer's initial awareness and a further pursuit of a need for a "matured" and "standing up" civil society that not only rose up from the ordinary mass but most importantly is capable of developing its own "boundaries" of thinking and conduct

[56] For original Chinese script please refer to Appendix 5.1.5.01. For details regarding actor #123 institutional status, refer to SG123.01.02.

distinct from the "government". Note that it was not a confrontational position being advocated from the account of the organizer, rather, it was an outlook and desire for a dynamic that can be called "the emergence of civil society" in the Chinese society[57].

With the awakening of serving others toward a larger social cause, as well as an increasing awareness of the distinguished role of civil society groups and NGOs existing apart from the state and the general public, the actors' choices of alternative channels in general were no longer as limited in the longer term as its situations right after the earthquake. If one option of reaching out to the other actor did not work as expected, there were ways to by-pass these obstacles to move forward in reaching its goals. One important point to make is that such a process cannot be disconnected with the fact that it was the actors themselves by their own agency in building their immediate neighborhood networks that contributed to the increasing opportunities for others at the same time. Action does initiate a process of creating social structure. But the dynamics of the structuration process in turn can provide further opportunities for actors interacting with each other. Therefore, each one of actor's actions in reaching out towards others matters, especially in times of a crisis. The more actions taken, the denser the network becomes,

[57] For related field notes and accounts, refer to Appendix 5.CaseSG123.2.

and the more efficient alternatives for actors to choose from in order to facilitate information flow throughout the network.

The concept of "capability" in this case therefore, can be perceived as an agency act to pursue connections and relationships despite of a crisis situation. It does not start off with certain self-oriented interest for the focal actor's economic or status gains, but begins with a motivation to benefit the others. Once such motivation is brought forth through a type of outreach action, the "capability set" (Sen, 1999), which represents the availability of opportunities for actors to exercise their choices for relationship formation, can then be measured by the level of solidarity that we have discussed throughout the last section.

Strength Formation

I have used the measurement of geodesic distance to look at the possible ways for information to flow efficiently throughout the network. However, the inherent assumption was that alternative efficient paths for a particular actor to reach out to its target were indeed implementable. By "implementable", I mean the strength of the ties between focal actors as well as the mediators on the efficient paths was "strong" enough

to get the pieces of information through towards its target destination. For emerging civil society actors in particular, the types of information being communicated went beyond emergency response activities. During the period transitioning to long-term recovery, more of these actors were willing to get in touch with others who could be helpful for them to develop their field expertise and grow from an informal social group towards a formal nonprofit organization.

It is possible that even if there are multiple efficient pathways counted as geodesic distances, a "weak connection" from the mediator to the target actor would not be able to get the desired message through. One source of such "weaknesses" can be a lack of familiarity between the mediator and the target actor, especially during the period when many grassroots actors were emerging shortly after the disaster. In incidences like these, the initiating actor might be better off by having established many other alternative communication channels that did not necessarily count towards the efficient paths. There might have been connections that could take up more steps than those on the geodesic paths. But the more connections of all kinds—including both efficient paths and other less efficient ones, the more likely that the initiating actor, particularly from the informal social groups' point of view, would be able to reach out to more pieces of information and other types of assistances from others in the long term.

The network measure I use to take this factor into consideration is called *maximum flow*. It takes one pair of actors at a time and considers to what extent the two actors are being maximally connected not just by shortest path connections (efficient communication channels) but also all the other available "routes" that are implementable for one to reach out to the other (alternative communication channels). The general premise of the "flow" approach as compared to the "geodesic distance" approach is the former's emphasis on the strength of weaknesses. This means that although it might take several intermediaries for one to communicate with the other, the availability of these indirect ("weak") paths will be counted as an advantage as compared to the situation when it is only through an efficient path that one can reach to the other.

The formal calculation was made by counting the number of different actors in the neighborhood of the source actor that would lead to the target actor. The following results are based on the examination of output matrix of maximum flow that depicted the overall patterns of change.

General Strength Formation (Maximum Flow)

Before the earthquake, we can see that the alternative routes that flow across the different pairs of actors were generally limited to one or two intermediaries[58]. This means that pieces of information were not as easily getting through as those with multiple points of intermediaries to direct alternative connection routes. The higher the number of actors performed the roles as intermediaries between a pair of actors, the higher the likelihood that the information would be passed from the source to the target. At a closer observation, actor #51 had a relative advantage in getting its own message sent out to its target because the number of flows from itself to the remaining actors in the network was higher when compared to others. In some cases, it had more than five medium actors lying in its local neighborhood that could facilitate the flow of information from the focal actor to another. In the incidences when one route did not work smoothly in facilitating the information flow, the focal actor had the choices so that it could redirect towards other alternative connections to get its voices heard through these other possible channels. Compared to those with only one medium across the pairs of actors, they would encounter difficulties when this one available route was not able to serve its purpose in realizing the information exchange. This type of connection pattern is more likely subject

[58] Please see Appendix 5.1.5*A1* for sample output.

to the changes in the outside influential factors such as actor attributes. This is a weak and "vulnerable" connection because the likelihood of the focal actor getting to know its target is dependent solely on this one intermediary, and if the communication tie between intermediary actor to the target actor wasn't realized, there would be no other pathways to turn to for another try. In the pre-earthquake time period, not only more actors were engaged in this type of vulnerable connection patterns, many pairs of actors were not even reachable to each other. This was the result of the amount of isolated actors who were disconnected from the network. Overall, during the time before the earthquake, communications among actors were rather difficult to be achieved and many seemed to be stuck in positions where the actual occurrences of communication ties being built were entirely dependent on the existence of only one choice. This would be a weak social structure that is normally vulnerable to disruptive changes as there is a lack of alternative opportunities and the overall circumstance can result in easily broken connections. Actors in this stage also tended to work in their own "circles" and there were no signs of relationship-building initiatives that would provide opportunities for them to get to know each other.

However, the actors' behaviors encountered a significant wave of change immediately after the disaster event in 2008. Examining across the maximum flow output

matrix[59], one of the most noticeable changes was that there was a surge of those acting as intermediaries in between pairs of actors. Not only the number of flows from one actor to another increased drastically, actors across the entire network also established more medium facilitators in their immediate neighborhood. Take actor #51 for example, the highest number of flows for it to reach out to the remaining actors was 8 while the majority of the rest of the flows stayed at the level of one or two during the period before the earthquake. During the period of short term response, the highest number of intermediaries jumped to 25 while the alternative routes in flows from itself to the other actors in the network also experienced significant increase in numbers. Actor #3 is another example. It was not in existence before the disaster. And right after the earthquake, the actor built up its own connections in such a way that the alternative routes available for it to communicate with its targets increased multiple-folds. This kind of group behavior did not just happen among a few selected pairs of actors but became a phenomenon across the entire flow pathways of the communication network. Similar observations can also be illustrated with many other newly emerged groups during the time of emergency response. The numbers and the trends reflected a sense of relationship and connection-driven efforts by a motivation of voluntarism immediately after disaster

[59] Please see Appendix 5.1.5*A2* for sample output.

event. Compared to the weak and vulnerable connection situations before the earthquake, actors in the emergency response period grew in their strength in their capability of sheltering against the possibility of general communication break-down. With multiple alternative connections to choose from and to fall back to when one choice did not work out in getting the message communicated through, actors then would have more opportunities to select another route of flow pathway for communication to occur. In other words, the more intermediaries in existence in the neighborhood of one actor, the more "safe-guarded" the strength of the connections, and the less likely that the tie-building efforts be disrupted. The social structure at this period of time can be regarded as more strengthening in terms of building up the opportunities available for pairs of actors to establish communication relationships. Such a pattern was maintained into the long term disaster recovery period[60]. Observing the maximum flows between pairs of actors revealed that the general increase in availability of multiple communication channels appeared to be endured in the long term. The endurance factor contributed to the strength of "resilience" as new relationships were being stabilized and possibly institutionalized through collaborative projects among actors.

[60] Please see Appendix 5.1.5*A3* for sample output.

Structural Formation from Action to Persistence

So far, my investigation in examining the communication network structures has been tie-based. It is centered in the intensiveness and extendedness of relationships among the actors themselves. I have used it to examine how actors were responsible in building up the connections in each of their own immediate social neighborhood, how that affects the connectedness of the structure of the whole network in terms of the distances between pairs of actors. Action itself also changed the social structure beyond the immediate neighborhood of the particular actor who initiated the act. The "solidarity" and "cohesiveness" of the structural environment in its entireness can also be subject to the dynamics of actors' network behavior over time. As more relationships were being built and more connections were weaved together across the network, the shapes of the structure and how information pathways were embedded in it through both direct and indirect relationships were all subject to change. In order to bring an in-depth picture of the development of such structural environments, this section will look at their differences across the various time stages. The focus is on the "structuration" side of the picture, as the following section depicts the dynamics of such a process in the formation of micro-structures from a "bottom-up" perspective. I particularly used the term "embeddedness" throughout the later discussions. And in this research context, this

means that each civil society group or organization was playing an active role in being a part forming the sub-structure within a given network structure.

Reciprocity

The density concept that we have discussed earlier emphasized on the mere existence of ties or relationships among actors but did not specifically take into consideration the direction of ties. From a structuration point of view, if actor A reaches out to actor B to establish a communication relationship, then, the tie direction in the network graph will be from A to B with an arrow pointing to actor B. This is only a primary state of existence of a social structure, which is in the form of one tie. The stage after this is that if actor B responded and also sends out a tie to actor A showing its interests in the communication relationship, then, the connection between A and B is called a "reciprocated" tie. Rather than looking at the picture from an ego-centered point of view, reciprocation brings in the other communication partner into the process. A reciprocated tie signals the interest of both parties and the beginning of a development of trust on both sides of the relationship. The foundation of a social structure builds on top of this type of ties. Without reciprocation between pairs of actors, information will not be

able to pass along across the network. Moreover, the strength of such a bond forged through a tie will be less likely to develop further if one of the parties is not responding to the other's relationship-building initiative. A network structure with more reciprocated ties will tend to be more "stable" than the one with more un-reciprocated ones (Hanneman and Riddle 2005). From a long term perspective, this is similar to the argument of "sustainability" and "endurance" of ties. If the two actors involved do not even have shared interests and trusts that could promote their actions in reciprocation, it is also less likely that the tie between them will withstand the test of time. Since one main goal for this study is to depict an explicit process from which the structuration, or in other words, institutionalization of a sustainable social environment can occur despite of a time of extreme uncertainty, the starting point of examining the reciprocity measures will be necessary.

One type of reciprocity measure is calculated by the *dyad method*. It focuses on the proportion of pairs of actors that have reciprocated ties between them. The degree of reciprocity is calculated among the pairs of actors that have any connection in the first place. The reason that I chose this particular measure was that the basis of calculation is concentrated in the actors themselves rather than on the ties. This was consistent with the

essential aim of this research, which was putting a primary emphasis on the capability of actors' agency in initiating change[61].

Looking at the communication network results for the period before the earthquake (see table 5.1.5), we find that 9% of pairs have reciprocated connection among all pairs of actors that have any connection.

Table 5.1.5. Reciprocity Measures (Communication Network)

Time period	Hybrid[62] Reciprocity (Communication)
t1	0.09
t2	0.0925
t3	0.1067

Essentially, not nearly one out of ten pairs of actors that had connections was reciprocated. In other words, the actors at this time were very much "content" with the state of existence as "closed" functioning entities without much connection to others. When a process of institutionalization is defined to start off with building up reciprocal relationships among groups and organizations, the communication network at this stage

[61] Also needed to be taken into consideration was the inclusion of the non-responsive actors. The calculation of reciprocity did treat the ties that were being initiated toward them as non-reciprocate consistently throughout the three time stages. I defined that the measures were comparable across these periods by understanding the concept as the prevalence of reciprocity in a given network environment (Hanneman and Riddle 2005).

[62] When the data is not partitioned according to certain groups according to pre-defined attributes, this is the same as the dyad method.

was far from having the signs towards being institutionalized across the pairs of actors. The majority of the pairs of connections were based on the direct action of one of the actors rather than two-way connections. It could also be inferred that there were not enough interests or much trust among actors and there seemed to be no need for mutually sharing of information. In this case, some of the actors were eager to communicate and build information sharing ties with others but without much response from the other side.

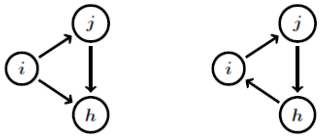
For the emergency response stage after the earthquake, the measure went up to 9.25%, which is a 0.25% increase from the previous period. This means that although slowly, more pairs of actors were having reciprocated connections. The noticeable point here was the condition under which such a growth occurred. Recall that at this time, the network became increasingly inclusive as more actors emerged to establish themselves in the field. And this dynamic was also accompanied by an increasing connectivity of those who were already in existence in the network before the disaster. An increase in reciprocity for a growing network represented a surge of "openness" in accepting others and willingness for actors to be connected and known by others at the same time. As the actors became more embedded in the network structure over the long term recovery period, reciprocity measure kept its gradual increase to a level that 10.67% of the pairs of actors with ties have reciprocated connections. This showed that during the recovery

period, relationships among actors beginning to show preliminary signs of institutionalization in terms of the degree of reciprocation in the network. For example, when actor A reaches out to actor B without B reciprocating in the form of communication, the relationship is unbalanced because the amount of information is passed along across the structure are tilted towards similar sources and there are few channels of facilitation pathways that information can flow in both directions. As a result, certain actors will tend to withhold information from the rest of the network or act alone. In cases when a disaster strikes, such a network structure will be more prone to be dysfunctional as ties are more one-directional with the other party not getting sufficient feedback or needed information to carry on further actions. A balanced relationship, on the other hand, features both actors accept and trust each other and are both willing to engage in sharing pieces of information. Such a reciprocated network provides a "nurturing environment" for each pair of actors to receive support and develop a stabilized connection with each other over time.

Transitivity

Relationships can show signs of institutionalization through the reciprocation process between one pair of actors. This is the most primary stage. The next level of examining how institutions of a structure can be formed is through the analysis of the network closure activities, or the creation of "triads". A triad involves three actors, such as one among actor A, B, and C, or actor B, C, and D illustrated in figure 5.1.2 discussed earlier. This type of basic structure among actors in this study is important to investigate because it looks at situations of how communication network grew and expand at the micro level as "friends of friends became friends".

There are two main types of triads in network analysis that are critical when relating to the context of this study. One is the called the "transitive triplet" and the other called "three-cycle". In this paragraph, I will briefly compare and contrast the technical nature of these two triadic relations and the later paragraphs will be following up with a discussion on the outcome applications to the communication networks in this study. First of all, figure 5.1.3 below provided a visual presentation of the two types of triads.



. a. Transitive triplet (i, j, h) b. Three-cycle

Figure 5.1.3. Triad Representations as in Transitive Triplet and Three-cycle Relationships

Source: (Snijders et al. 2010, 11)

Basically, both of these social structures represent the particular ways of expressing network closure. One other similarity between the two is the existence of a "friend of friend" relationship from actor *i* to actor *h* through *j*: $\{i \to j \to h\}$. Starting from here, it is the direction of the tie from *i* to *h* that essentially differentiates of what constitute as a transitive triplet structure and a three-cycle structure among the three actors. For transitive triplet network closure structure is one when given the two-path of: $\{i \to j \to h\}$, it is actor *i* then reach out to *h* to close the tie structure ($i \to h$). Note that there is one other possible way to examine this structure. It is also true that transitive triplets can take effect when there is: $\{i \to h \to j; i \to j\}$, not just in circumstances like: $\{i \to j \to h; i \to h\}$. Essentially, if actor *i* is the focal point of interest, the transitivity of actor *i* can be calculated by counting the number of pairs *j, h* such that there is the transitive triplet structure of Figure 5.1.3a.

For three-cycle network closure structure on the other hand, the two-path $\{i \to j \to h\}$ is closed by the tie $h \to i$, as is shown in Figure 5.1.3b. Here, the critical difference from the transitive triplet mentioned earlier is that the way triadic structure closes itself. When actor h initiates a tie towards i, the network structure becomes a complete cycle with each of the three parties willingly participating in the general exchange of information or resources. In the network analysis literature, this type of structure can also be interpreted as "generalized reciprocity". Looking at Figure 5.1.3a, we can see that actor j is the medium between i and h. But in the transitive triplet situation, actor i not only initiates a tie to j but also reached out to h. The fact that actor h can but did not close the relationship by initiating communication with i proactively shows that actor h probably is more prominent possibly in terms of information or other types of resources that might be helpful from actor i's point of view. Further comparing the two structures in terms of information exchange and communication type of relationships, information can spread evenly or in a more balanced way for three-cycle triad while the transitive triplet triad tends to create a dynamic where information flow is concentrated in favor of certain actors but not others. While this is logical from the theoretical network analysis perspective, as in the later sections when examining these structures in the context of this study, I argue that for rapidly growing social structures

such as the communication and collaboration networks after the earthquake disaster in China, transitive triplet triadic relationships can also be a representation of active agency on the part of focal actors out of their desire to build ties at a given point of time and context.

As defined earlier, a triadic structure is considered being "transitive" when it depicts a type of relationship like that in Figure 5.1.3a. The primary formula being used to calculate the transitive ties is by counting the number of times that $i \to h$ occurs, if we see $i \to j$ and $j \to h$. Table 5.1.6 provided a direct summary of the different transitivity measures that will be used to take an in-depth look at the formation of the triadic type of institutions among actors in the network.

Table 5.1.6. Triadic Relationships in Communication Networks (Transitivity Measures)

	$\{AB, BC, AC\}$	$\{AB, BC, anything\}$	Transitivity
t1	283	902	31.37%
t2	4328	12458	34.74%
t3	6101	16067	37.97%

For the period before the earthquake, there were 283 transitive triples where, if AB and BC present, then AC is also present. The second column of the table provided a way of seeing triadic relationships that is less constraining than the one used in the first column. It relaxes the direction within which A must send a tie to C, given the condition that AB and BC present. In this case, as long as there is a tie between A and C to close the triadic relationship among the three actors, whether the link direction is AC or CA is not taken into consideration. At this stage, there were a total of 902 this kind of triads in the communication network. When dividing the number of $\{AB, BC, AC\}$ by the number of $\{AB, BC, anything\}$, we get the "transitivity" measure illustrated in the last column. Therefore, 31.37% of all the communication relationships that could be transitive, actually were. For the time stage before the disaster, from all the cases that provided opportunities for actor A to reach to actor C, 31.37% of the actual relations turned out to be A initiating a tie towards C. For the short term emergency response stage, the sheer quantity of the number of $\{AB, BC, AC\}$ relationships jumped to 4328, which were more than 15 folds of the measure from the previous period. At the same time, the $\{AB, BC, anything\}$ relationship increased in quantity even more from its earlier measures. The transitivity thus increased to 34.74%, meaning that of all the possible incidences where ties can be transitive, this percentage of relations actually came into

being. Both the number of transitive triples and the transitivity measure increased steadily in the recovery period. There were a total of 6101 transitive triads at this last stage and they counted 37.97% out of all cases that could easily be transitive with one link to complete the triad.

To take a closer look at how the network structure in terms of transitivity has changed before and after the earthquake, I now examine the first two columns of table 5.1.6 in an in-depth manner.

First of all, the number of cases, where a single tie between A and C regardless of directions could complete a triadic relationship, experienced a 92.75% increase from the period before the disaster to shortly afterwards. And this type of triadic case had a 22.46% increase when it was into the recovery period. This meant that as a result of agency action in establishing relationships on the part of each actor's out-degree connection, the opportunities for actors to get connected through mutual acquaintances increased dramatically. The key point here is that actors were not presented with these opportunities from an "outside" agent by remaining inactive, but such was the result of actors themselves being proactive in putting their ambition and desire into practice particularly during the emergency response period after the disaster. Now faced with

further possibilities to get to communicate with others through intermediate actors, such as cases with ties from AB and to BC, actors such as A were also willing to reach out to those like C to close the triadic relationship among the three actors. From the measures presented in the first column, the actual cases of transitive triplets increased by 93.46% from before the earthquake to emergency response stage. And it was followed by a 29.06% increase afterwards when going into the long term disaster recovery period. Transitivity structures such as these have generally been regarded as an indicator that the network has a tendency for hierarchical structural relationships. As was discussed earlier, this is due to the fact that there are certain actors when embedded in a triadic relationship, such as actor A in our example, are more likely to reach out more to initiate ties with the "friend of a friend" and passing information towards the other party.

To some extent, this is a reasonable interpretation of the network because when understanding from the perspective of communication and information exchange, if one party (such as actor A) kept being the one sending out signals to the other two actors in cases such as: $\{AB, BC, anything\}$, it is possible that actor C could have more prestige, "fame", or "power" in terms of their field of expertise that others might be more willing to connect with. However, within the context of this research, I would like to argue that

this type of transitive structure can also be viewed as a way to represent an act of agency to deal with the disastrous impacts and changes in times of crisis.

When interpreting the meanings of the network measures to understand the structures and actions of civil society in this study, it is always helpful to keep in mind the particular context from which the social structures at hand had emerged. As the response to the disaster triggered the act of voluntarism among civil society actors, it also helped these actors to realize their functioning opportunities to reach out to others. This could be a sign of actively recognizing their independent role as initiators in communicating and relating to others who share similar values. On the part of those actors who were like actor A, especially if they were newly emerged groups and were also "new" to the civil society domain, the dramatic increase in the number of cases for them to be the ones to close a transitive triad relationship could have another important layer of interpretation. It signified a type of behavioral choice available when these actors perceived to have more opportunities presented as cases of $\{AB, BC, anything\}$.

In other words, the structure itself provided a certain kind of freedom of functioning for action and once these functionings were perceived as beneficial for relational growth or communication-building on the part of civil society actors, they

would act it out by initiating ties towards others through mediums. The synergy or motives behind the decisions to make such choices could, I argue, be captured by examining the dynamics of transitivity structures. The measures of the cases where actor A was willing to reach out to actor C rather than wait reactively for C to reach itself, were key indicators that civil society actors in this context valued a spirit of agency to take matters into their own hands. For times after a catastrophic disaster when both the physical and social systems were shaken and damaged, this type of behavior was more valuable for newly emerged social actors and getting them linked into the network. Therefore, as the other side of the "hierarchical tendency" perspective, the emergence of transitive triple structures could offer a relatively new picture to understand the society side of the story.

In the field of planning and policy-making, the perspectives of the society are often being assumed or even overlooked in the decision-making process. This is mainly because of the difficulties in making the actions taken by the civil society actors explicitly through which their behaviors and motivations can be revealed. The interpretation process of the transitivity measures in this section can function as one of the steps for state actors to begin to understand civil society through its actions. For network analysis in general, the lesson here is that close attention needs to be paid to the

context within which the measures are represented. Just as in this study, switching the lenses from looking at the structure through a top-down perspective to a bottom up perspective--by allowing the stories of the civil society actors to reveal itself over time, the other sides of the implications are equally important for policy-making.

One last point that I would like to make here is regarding the paradox of institutional structure and actions of change mentioned in the theoretical section. In the discussion of transitivity, one needs to recognize that the very first stage of institutional-building process in this case originated from the agency actions on the part of civil society actors. As each actor extended its immediate communication relationships with the remaining actors in the network, the number of intermediary increases and thus the cases of triadic incidences that actors would face. The kinds of relations that could easily be triadic, such as the structure like $\{AB, BC, anything\}$, thus provided the embedded actors two choices to complete the triadic closure. One is actor A reached out to C generating a complete transitive triad and the other option is C reached out to A generating a three-cycle relationship. From a network analysis perspective, the structure itself does postulate a certain degree of local "constraints" on the action choices of actors A and C in terms of creating triadic relationships among one another. However, if looking at the situation from the actors' perspective, especially the civil society actors in

the disaster response and recovery context, the existence of such cases where a single link could complete the creation of a transitive triplet can be perceived as an opportunity to build further connections and make themselves known. In particular, when an actor was a newly formed grassroots group in response to the earthquake, it would be more willingly to seize such an opportunity to make the first move in completing the triadic closure. In the Chinese disaster recovery context, with the mass emergence of Sichuan-based grassroots social groups and the coming-together of those nonprofit organizations from across the country in Sichuan Province shortly after the earthquake, the possibility of each one of these civil society actors knowing the other well was relatively low. The relationships among them, for most of the cases, had to be built from scratch. During the emergency response period, when responding to the needs of the impacted areas in time became the top priority, the existence of transitive triplet triads represented one way of how civil society actors could proactively deal with change to alleviate the disastrous impact of the catastrophe. The more they initiated connections with others, the more useful information they would be able to obtain, and thus the higher chances that they would provide assistance to locations that needed the most. From this line of logic, I argue that the transitive triplet triadic relationships could be one of the representative social structures to examine disaster response and recovery efforts on the part of civil

society. Note that this is a derived position taking into consideration of the civil society actors' point of view of the structure. And when such a lens is equipped to examine the transitivity measures, alternative explanations of the existence of the structure are possible in order to advance the theories in understanding network structures in different types of contexts.

Clustering

So far, I examined some of the basic embedding structures that actors can be institutionalized at their local environment. Two of the most important ones are reciprocal and triadic relationships. The emergence process of institutional structures for these two types of connections can be specified and understood through the examination of reciprocity and transitivity measures. A third concept that is critical on this journey to unravel the growth process of Chinese civil society after the crisis is called *clustering*. It is a measure that considers the immediate neighborhoods of actors, which includes all the actors that the focal actor is connected to. Essentially, it is measured by calculating the density of every actor's local neighborhood. The size of each of the actor's immediate neighborhood can be a useful indicator in taking a closer look at the actor-by-actor level

of agency activity through communication networks and the level of motivation in being committed through collaboration networks. The measures can be informative in describing the tendency of each of the structures towards dense local neighborhoods.

In table 5.1.7, three categories of measures for clustering in communication networks are listed here for investigation. Because of the high level of integration and compactness of the information exchange network after the earthquake, I use the communication network as a representation of the motivational drives for actors to actively move toward each other.

Table 5.1.7. Clustering Coefficient (Communication Network)-Motivational Network

	Overall graph clustering coefficient	Weighted overall graph clustering coefficient	Overall Density
t1	0.341	0.129	0.0122
t2	0.455	0.139	0.0544
t3	0.496	0.167	0.0631

First, the overall graph clustering coefficient is the average density of all the neighborhoods of all the actors. Secondly, the weighted version is shown in the second column. It is the coefficient actually takes into account of the differing sizes of the neighborhood densities and the average density in this case is calculated proportional to

the sizes of the neighborhoods. The third column shows the overall density of the entire network graph. The reason to bring back the overall density measures here is to establish a point of comparison when making a statement regarding the level of clustering at different time periods.

Let's start with the communication network clustering before the earthquake. The overall coefficient is 0.341, which is much higher than the overall density at this period of time (0.0122). However, after weighing across the sizes of neighborhoods, the coefficient measure became much less dense (0.129), but still higher than the overall density. This means that there were certain degrees of clustering in different actors' immediate neighborhoods.

In order to depict the disparities of clustering among actors, I further examined the node level clustering coefficients. Each actor's level of embeddedness was derived from two measures. One of them represented the size of an actor's local neighborhood by examining all the other actors that have direct connections with the focal actor. This was calculated by counting the number of pairs of actors inside the immediate neighborhood of the focal actor. The other one represented the percentage of all the possible ties among

these neighbors were actually present. The higher this percentage, the higher the level of neighborhood clustering within which the focal actor would be embedded in.

Let me use a graphic example to illustrate a process of clustering formation in detail. The graph below (Figure 5.1.4) shows the communication structure before the earthquake event.

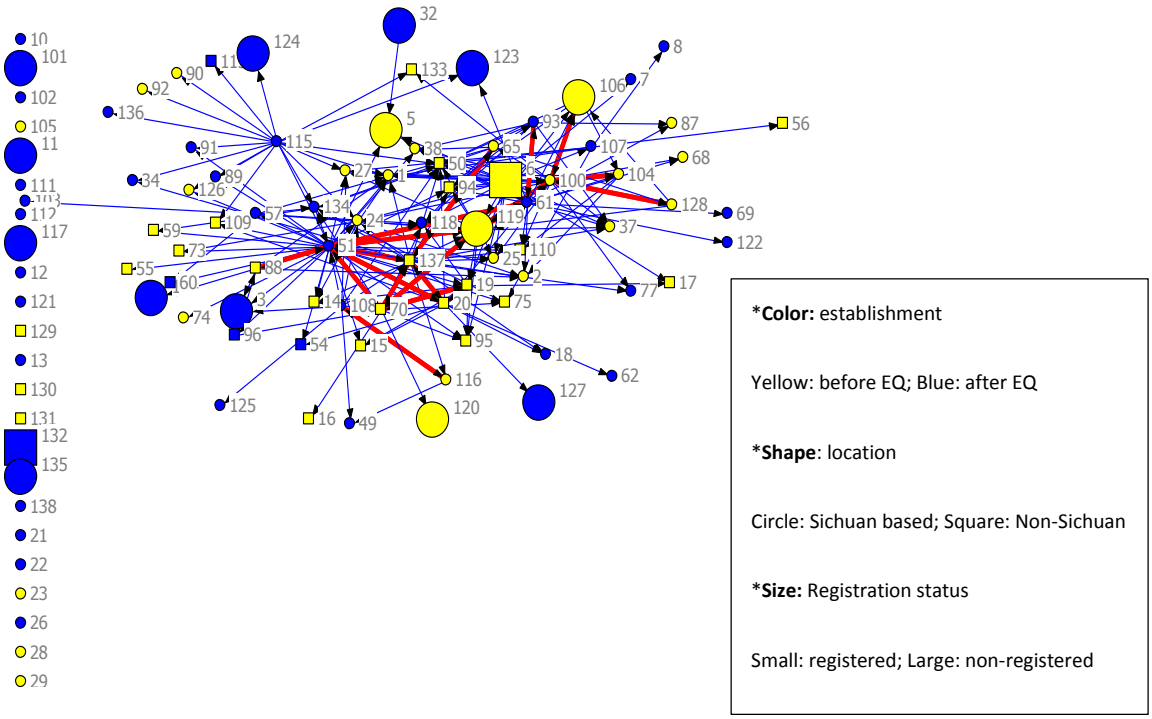


Figure 5.1.4. Communication Network with Selected Actor Traits (Pre-earthquake[63])

Actor #115, visually, seemed to be engaged in a "radiation-like" local neighborhood, which means that it sent out many one directional ties without getting

[63] For graphs corresponding to emergency and recovery periods, please see Appendix 5.1.3.

many reciprocations from others. Nor did the actors within its immediate neighborhood were well connected with each other. For some of them, such as actor # 136, #90, #92, #113, and #124, their ties with actor #115 were the only communication channels they had during the period before the disaster. The information pathways for these actors were very much constrained by and dependent on the actions of #115. Given this immediate set of neighborhood conditions, what the node level coefficient first calculated was the number of pairs of neighbors or the possible ties among these pairs of actors. For actor 115's neighborhood, there were a total of 153 possible pairs of actors, hence ties that could exist among them. Compared with some of the other actors in the network, this was a relatively large cluster if all of these ties were realized. However, only 3.3% of all these possible ties were actually realized at this period of time. The conclusion we can draw for actor #115 is that it was not embedded in a highly clustered neighborhood before the earthquake. Graphically, this could be demonstrated by looking at a very loosely connected neighborhood for the focal actor.

Compare the situation of #115 with actor #119, the latter exemplifies a quite different picture. First of all, there were 136 pairs of possible ties in its immediate neighborhood, which was comparable to that of actor #115. But this time, 18.8% of all these were actualized for #119. The actors in its local neighborhood were well connected

to each other. For communication networks, one of the advantages of being embedded in a relatively higher clustered neighborhood is that the information exchange pathways will be able to flow more "smoothly" from one actor to another. From the focal actor's point of view, embeddedness in a highly clustered local neighborhood will also open up the opportunities for it to reach out for information and get itself known by more actors in the network.

Observing the two measures across all the actors, it can be concluded that the largest size of neighborhood that one actor had during the period before the earthquake was surrounding actor #51. Given the number of actors that it directly connected to, the total number of pairs of neighbors that were possible for this actor to be embedded in is 703. The potential to be well connected in its local neighborhood was high. But only 5.2% of all the possible ties were actually present. Actor #61 had the next largest size of immediate neighborhood consisting of 210 possible pairs of actors and out of these, 10.7% of the ties were actually being realized. The largest node level cluster coefficient is at 100%. However, the actors whose local neighborhood has a level 1.0 clustering were only connected to one pair of neighbors. The presence of a tie between these two neighbors generated the most basic triadic relationship among three actors. But this does not mean that the focal actor was embedded in a highly clustered neighborhood because it

did not have a large number of direct connections to others to form a dense enough clustered neighborhood. In general, this communication network is relatively less clustered. In other words, actors had few chances to become embedded in highly clustered local neighborhoods because of the low density of the overall network. Civil society actors in existence at this stage of time were not so well acquainted with each other. Even though an actor had higher level of opportunities to be embedded in neighborhood resulting in high clustering, the lack of agency action further reduced such possibilities to be realized. This resulted in the communication channels generally being sparse for the period before the earthquake.

As the overall communication network became more clustered shortly after the earthquake, the number of possible pairs of neighbors surrounding actor #115 decreased from 153 to 78. However, among these 78 ties among its neighbors, 35.3% were actually in presence. While the number of pairs of neighbors for this actor stayed the same over the long term recovery stage, the realization of these ties went up to 42.9%. This was an indication that the actor gradually became more woven into the connections among its neighbors, thus making the flow of information within this particular cluster easier. Observing the measures of the entire network for the two periods after the earthquake, actors were generally embedded in higher clustered neighborhoods over time.

There are two lessons to be learned from the civil society actors' perspective in this part of the investigation. One is that it is important to recognize the agency action on the part of each one of the focal actor to actively seek out the opportunities to establish initial ties with the remaining others in the network. This type of behavior yielded the following results. On the one hand, action itself helped building large local neighborhood for a particular focal actor. On the other hand, the tie possibilities among the actors in the immediate neighborhood, whether actually presented or not, could be seen as one form of "capability set" that the focal actor could choose to utilize for information exchange or collaboration purposes. This leads us to the second lesson. The realization of such "capability sets" for each focal actor also depended on the actual tie formation among the neighborhood actors. Such interdependency became another illustration of the relationship between action and structure. When institutions were understood as the enduring connections among actors in consideration, the institutionalization of ties can also be a process generating a breeding ground for change. In an information exchange network environment, a position that the focal actor is embedded in a highly clustered neighborhood is likely to be desirable because such a structure facilitates information flow through the available different channels of pathways. Once these possible pathways

were being built and endured over time, this opened up the opportunity for the focal actor to communicate with as many "friends of friends" in its local neighborhood.

For the period before the earthquake, there was still certain degree of clustering in the communication network because the weighted overall clustering coefficient is about 10% higher than the overall density measure. Actors could have large size of immediate neighborhood but very low node level clustering coefficient. Very few of the possible ties between pairs of neighbors yielded into actual connections. There were also numerous pockets of empty pairs for a number of actors throughout the calculation of their clustering coefficient. This was either due to the actor in existence being disconnected from the network or due to the non-existence of the actors at this stage of time.

During the period immediately after the earthquake, the overall degree of clustering increased from 0.341 to 0.455. After taking into account of the proportions of different neighborhood sizes, the weighted overall clustering coefficient increased from 0.129 to 0.139. This weighted coefficient was still higher than the overall density measure, which also jumped from 0.0122 to 0.0544. Reflected in the node level clustering coefficient measures, one can observe a general trend in terms of more actors being embedded in highly clustered local neighborhoods. As more previously isolated or

non-existent actors became actively engaged in the emergency response network, the pockets of "emptiness" in pairs of neighbors for these actors generally disappeared. Compared to the previous period, civil society actors were more actively engaged in initiating ties and hence, increasing the creation of more relatively highly clustered neighborhoods available for each individual actor across the network.

Registration Status Group-external and Group-internal Ties

So far, I have examined the embedding processes of actors, each as a single node immersed within their communication networks. It is now useful to conduct a preliminary investigation to see whether one of the actor attributes affect the embedding structures. In network analysis, each category within a particular actor attribute is named as one group. The number of categories that an attribute differentiates is equal to the number of groups that will be investigated at each stage. In this section, I focused on actor registration status. For this attribute, two general groups were defined to represent either registered or unregistered status. The original impetus for making such a differentiation on actors' status was that in the Chinese context, registration for nonprofit groups and organizations often faced with issues of getting the formal institutionalized status with both the

Ministry of Civil Affairs and sponsorships with local governments. The level of interaction between informal groups and formally registered nonprofit organizations is a critical component in looking at the nature of information flow and projects collaboration among actors. From a disaster response and recovery policy design point of view, it is more desirable for non-registered actors and registered actors to reach out for each other as the latter are usually more experienced ones in the field and can particularly provide information or resource assistances for the former to develop in the long term. More cross-groups ties can also signify a sense of openness and embracing willingness to help each other out after the earthquake.

In order to evaluate this social structure by looking closer into the group "fabrics" within which actors were embedded, I used a measure called the *E-I Index*. The external-internal index (E-I Index) is one way in network analysis to examine the connections that are made inside a group and across different groups. The measure is calculated first by subtracting the number of ties group members made inside the group from the number of ties of group members made towards outsiders. The result from this subtraction will then be divided by the total number of ties. Therefore, the measure for the index will be between -1, with all connections being made inside of the group, and +1, with all connections being made outside the group. A point to note here is that the directions of

the ties do not matter in the calculation of this measure. As long as there is a connection made between two actors, regardless of who initiated it, the relationship will be counted as one tie. With these definitions in hand, I will now explore the different aspects of the E-I Index for registration status and location attributes from the current dataset.

Pre-Earthquake

I defined two groups in the category of registration attribute. Group 1 represented the registered actors and group 2 represented the un-registered actors. The results listed in the table below (see table 5.1.8) provided a general picture of actor activities within and between groups. The density for communications made within the registered nonprofit organizations was 0.017 and 0.027 for information exchanges made among the non-registered actors. General communication across the registered and nonregistered groups was 0.031, which was slightly higher than within group densities.

Table 5.1.8. Communication Network Pre-Earthquake Within-Group and Cross-Group Density[64] Measures based on Registration Actor Attribute

	Group 1 (registered)	Group 2 (non-registered)
Group 1 (registered)	0.017	0.031
Group 2 (non-registered)	0.031	0.027

Therefore, more ties were made among actors who belonged to the un-registered group. Off-diagonally, it seemed that out-group ties were more prevalent than in-group ties. Overall, during the period before the earthquake, the in-group connections made by registered civil society actors are not as many as those made among non-registered actors. The actors also made more cross-group ties rather than constraining themselves to connecting to only those who have similar registration traits. This was a preliminary indicator showing that registration status did not seem to be a barrier for civil society actors to develop communication relationships among each other even before the earthquake event in 2008.

From Table 5.1.9, we can observe the in-group and between-group ties for the network as a whole. The total number of internal ties being made, regardless of group numbers, amounts to 228 and that was 54% of all ties existing in the network. The

[64] These are block densities measures. The ratios off the diagonal represent out-group densities. The ratios on the main diagonal represent in-group densities.

number of external connections was slightly smaller than that of the internal ties, and this amounted to 194 ties (46%). In general, the behavior of civil society actors did not exemplify a distinguished bounded-ness structure of sub-population, when considering in terms of registration status at this period of time.

Table 5.1.9. Communication Network Pre-Earthquake Whole Network Results of Group Internal and Group External Ties Based on Registration Actor Attribute

	Frequency	Percentage	Possible	Density[65]
Group Internal Ties	228.000	0.540	12584.000	0.018
Group External Ties	194.000	0.460	6322.000	0.031

Continuing further examination of results from the whole network perspective, we can see that the rescaled value of the E-I index for the communication network before the earthquake is negative 0.081. Since this measure takes into account of the group sizes and the density of the graph, the re-scaled measure is taken to be more reliable as the primary indicator for group embeddedness. Also recall that a negative 1 index measure represents that all ties are internal to the group. An index value of -0.081 suggested that there is a very weak tendency towards group closure.

[65] The overall density measure presented here are calculated as the ratio of the number of group internal ties (or external ties) that are present divided by the number of pairs—all possible dyadic connections.

The next level of analysis was the group-level E-I Index. Table 5.1.10 illustrated the variations across groups in terms of their degrees of closure.

Table 5.1.10. Communication Network Pre-Earthquake Group level E-I Index Based on Registration Actor Attribute

	Internal	External	Total	E-I
Group1 (registered)	206.000	97.000	303.000	-0.360
Group2 (non-registered)	22.000	97.000	119.000	0.630

First of all, actors in the registered group made a total number of 206 group internal ties and 97 group external ties. The non-registered actors made significantly less number of internal ties (22). But at the same time, these same actors made exactly the same number of outside-group information exchange connections (97) as that of its registered counterparts. What this suggests is that the non-registered actors, or informal grassroots groups, tended to build relationships across institutional boundaries during the period before the earthquake. Although actors in the registered group also made the same amount of external ties, compared to their efforts in making connections inside the group, they showed a quite strong tendency towards group closure. The structure overall, when thinking in terms of the roles of sub-groups, the informal grassroots appeared to be more

likely to communicate outside their group boundary than their registered counterparts did[66].

In order to look closely at the actor-level of connections, I developed a way in understanding the group embeddedness by examining the variability at the actor-level. Table 5.1.11 showed some of the actors who ranked relatively high in having internal and external ties.

Table 5.1.11. Communication Network Pre-Earthquake Ranking of Variability across Actors with Group Trait Based on Registration Actor Attribute

Internal	#115, #137, #119, #6
External	#51, #61, #100

Actors #115, #137, #119, and #6 tended towards group closure concerning registration status. Before the earthquake event, each of them made higher level of communication with those with similar registration status with themselves. Among them, #115 and #137 were registered domestic nonprofit organizations. Looking back at the actors who were highly active in initiating ties towards others, both #137 and #115 were among those with relatively high out-degrees. We now have a more precise picture of the embeddedness of these actors. They were not only proactive in building communication relationships with

[66] One caution when using the measures in table 5.1.10 is that the E-I index results were not in the "re-scaled" format, which is taking into consideration of the group sizes and the density of the connected network. Therefore, it is safe to look at these measures here in corroboration with all the other results developed through this analysis.

others in the network, many of their connections, regardless of which party initiated the ties, ended up to be with registered nonprofit organizations. Both actors #119 and #6 were non-registered foreign nonprofit organizations operating in China since before the earthquake. During this period of time, they were all active in constructing communication ties with others as well, which ranked them high in terms of the out-degree. Contrary to the behavior propensity for actors #137 and #115, the fact that actors #6 and #119 had a tendency to have group closures with non-registered actors in the communication network suggested that these foreign-based civil society actors were less bounded by registration status of the other actors they were in touch with and were more willingly to be open towards others, especially Chinese domestic grassroots.

Actors #51, #61, and #100 ranked the top among those who had a tendency to have ties outside of their own registration groups. From earlier investigation, I showed that all three actors also ranked high in sending out communication ties towards others. I have shown the nature of the actors[67] and now I have information on the characteristics of the kind of ties they made. These actors were all registered nonprofit organizations at this

[67] Recall that actor #61 originally entered China as a foreign-based NGO, but over the years of practicing in the field across different regions to alleviate poverty inside China, it established its formal field offices and obtained its registration status before the 2008 Wenchuan earthquake. Actors #51 and #100 are both Chinese domestic nonprofits.

time period. The degree of external ties for these three actors suggested that they tended to develop ties that cross the registration status divide in the network. When capacity development for civil society actors is the policy goal for planning not just for disaster preparedness and mitigation but also for times of uncertainty, the development of the newly emerged actors in the field or those smaller grassroots informal groups is an important aspect of policy design process. Aside from the policy measures prescribed and mandated by the state, one critical concern is how to increase the capacity of civil society actors themselves to take actions to cope and adapt when facing crisis. In the Chinese context, the ability and willingness of the more experienced and established civil society actors to extend a hand to those smaller informal ones could be a case in point. Actors like #51, #61, and #100 that exemplify high out-degree and a tendency for high external-group ties can be the key starting point in effectively engaging civil society actors.

Post-Earthquake

I now move on to look at the changes of the communication network after the earthquake. First of all, let me compare the measures showed in the density tables (5.1.12 and 5.1.13).

Table 5.1.12. Communication Network Emergency Response Within-Group and Cross-Group Density Measures based on Registration Actor Attribute

	Group 1 (registered)	Group 2 (non-registered)
Group 1 (registered)	0.098	0.107
Group 2 (non-registered)	0.107	0.074

Table 5.1.13. Communication Network Long-term Recovery Within-Group and Cross-Group Density Measures based on Registration Actor Attribute

	Group 1 (registered)	Group 2 (non-registered)
Group 1 (registered)	0.108	0.128
Group 2 (non-registered)	0.128	0.089

We can see that shortly after the disaster, the density of ties built within each of the two groups increased dramatically. The overall density within the registered group actors increased from 0.017 to 0.098, while the density among nonregistered group actors went up from 0.027 to 0.074. This means that actors inside each of the groups were communicating and sharing information with significantly higher number of others of the same registration status. The within-group information exchange relationships became increasingly prevalent for both the emergency response and the recovery periods as compared to before the earthquake. In addition, the registration status did not seem to be

a barrier for information sharing post-earthquake. In other words, civil society actors were more willing to take cross-boundary initiatives. When comparing the in-group and out-group ties together, the densities for out-group ties were still more prevalent than the densities of in-group ties. This pattern of density increase remained throughout the long term recovery stage, with the measures for both within-group and between-group connections continued to grow steadily.

Compared to the emergency response stage, the recovery period experienced a less dramatic climb in all density measures, for both within group and across group communication ties. Note that the nature of the change pattern was not one that the increasing trend stopped or reversed into decreasing trend, instead, actors continued building ties both in and between groups with the process turned to be steady. This primarily indicated that actors, both registered and non-registered were willingly to maintain the ties that were built during period shortly after the earthquake. The change in agency actions over the emergency response stage was not merely an instinctive temporary surge of kind-heartedness and voluntarism on the part of those ordinary citizens who participated in the response activities. It was more importantly, a collective intentional journey for the Chinese civil society to cope and search for its own identity and growth when facing a crisis. A process of institutionalization of connections among

the group and organizational actors had been an inherent pattern revealed by the sustained efforts in tie-building over time. This pattern can also be demonstrated by examining the communication network as a whole, shown in table 5.1.14 and table 5.1.15. The number of internal ties jumped up from 228 to 1208 (64.2%), and the number of external ties went up from 194 to 674 (35.8%).

Table 5.1.14. Communication Network Emergency Response Whole Network Results of Group Internal and Group External Ties Based on Registration Actor Attribute

	Frequency	Percentage	Possible	Density
Group Internal	1208.000	0.642	12584.000	0.096
Group External	674.000	0.358	6322.000	0.107

Note: There are a total number of 1882 ties.

Table 5.1.15. Communication Network Long-term Recovery Whole Network Results of Group Internal and Group External Ties Based on Registration Actor Attribute

	Frequency	Percentage	Possible	Density
Group Internal	1348.000	0.625	12584.000	0.107
Group External	808.000	0.375	6322.000	0.128

Note: There are a total number of 2156 ties.

After adjusting the different group sizes and the density of the graph, the re-scaled E-I index for the emergency response stage was -0.284. We can say that, given the demographic constraints in terms of the maximum possible ties that could be made inside each group (shown in fourth column of table 5.1.14) and the overall density (shown in the last column of table 5.1.14), the communication network during the emergency response stage had a higher tendency, when compared to before the earthquake, to in-group bounded-ness and closure in terms of registration status. For a social structure that focuses on communication and information exchange, such a slight tendency towards sub-population closure in terms of registration status increased the possibility that there would be barriers in information flow, especially for registration-related cross-group ties. One explanation for such a tendency is, with the increasing network integration with the emergence of informal grassroots groups at this period of time, it could be a phase where civil society actors trying to get to know each other and starting to be aware of the existence of those just came to disaster response and recovery practices in the field. The tendency to go towards those with similar registration attribute could be the beginning stage for actors to explore the possibility of developing communication partners. In the short term after the disaster, the time constraints for actors to take action promoted a

temporary kind of “near-sightedness” behavior. This resulted in being drawn to those with similar traits as themselves.

Some parts of the emergency registration sub-group structure pattern continued into the long term recovery period. The total number of ties increased from 1882 to 2156. Out of all these existing ties, the percentage of internal group ties remained to be larger than those made externally. While the number of connections inside each group kept increasing, the percentage for group internal ties decreased slightly to 62.5% with the group external ties increased to 37.5%. There was a slight change in the grouping structures for the immediate stage after the earthquake. The overall internal group communication decreased by 1.7%, while the external group ties increased by the same percentage points. This could be an encouraging sign because the nature of the communication network structure appeared to become less segregated in terms of registration status. Alternatively, if we look at the overall density of those ties made internally and externally, the latter (0.107) turned out to be higher than the former (0.096). One point worth noting here is that these measures were calculated based on the consideration of the maximum possible number of internal and external ties, which was a different formula from using the actual existence of ties to calculate the percentages. The density measure, therefore, represented a more comprehensive picture of the

concentration of ties for each of the group. For the long term recovery period, the speed of the information diffusion across the two groups was more likely to have increased, given the consistent increase in density measures of both group internal and group external ties.

In terms of calculating the E-I index when considering the differentiation in group sizes and densities as discussed earlier, the re-scaled E-I index for this period is -0.250, which turned out to be lower than that from the emergency response period. Over time, there happened to be lower degree of tendency for civil society actors' communication behavior to be segregated by registration status and there were more information pathways for cross-group communication to take place. This piece of evidence also suggested that the behavioral tendency for group closure had been slowly dissolved as the structure itself showed signs of institutionalization over time. As actors became more acquainted and having had more information about others through the embedding structures such as dyadic, triadic, and the clustering, they gradually revealed their willingness to take actions reaching out regardless of the registration status concerns.

Going further in-depth with the group level of the analysis, tables 5.1.16 and 5.1.17 illustrated the group level E-I index for the two periods after the earthquake.

Table 5.1.16. Communication Network Emergency Response Group level E-I Index Based on Registration Actor Attribute

	Internal	External	Total	E-I
1(registered)	1148.000	337.000	1485.000	-0.546
2(non-registered)	60.000	337.000	397.000	0.698

Table 5.1.17. Communication Network Long-term Recovery Group level E-I Index Based on Registration Actor Attribute

	Internal	External	Total	E-I
1(registered)	1276.000	404.000	1680.000	-0.519
2(non-registered)	72.000	404.000	476.000	0.697

Comparing before and immediately after the earthquake, the number of internal ties made by both groups of actors climbed up during the emergency response stage, but with a more dramatic increase inside the registered group from 206 to 1148 ties. The rate of growth slowed down when it went into the disaster recovery period. On the one hand, both registered and non-registered group members continued to exchange more information inside each of their own group. On the other hand, one of the most significant structural development at this point could be reflected through the number changes in cross group information exchanges. Recall that before the earthquake, there

were a total of only 97 cross-group ties. Shortly after the disaster, this number jumped up to 337 and kept increasing to 404 during the long term recovery. From the E-I index column, the two groups also showed different tendencies in terms group closure. At the immediate response stage, the registered actors seemed to be more likely to have in-group ties while the non-registered group actors was more likely to build ties outside of their group. Over the long run, the tendency for registered actors to have in-group closure waned while the non-registered actors remained consistent in their efforts in reaching out to form cross-group communication ties.

Civil Society Actor Level Variability

I now briefly examine the variability across actors. This will provide a zoomed-in picture of what happened to the agency actions within the civil society domain. Tables 5.1.18, 5.1.19, and 5.1.20 illustrate some of the top-ranking actors that exhibited high level efforts in building internal and external group ties before and after the earthquake.

Table 5.1.18. Communication Network Pre-Earthquake Ranking of Variability across Individual Actors with Group Trait Based on Registration Actor Attribute

Internal	#115, #137, #119, #6
External	#51, #61, #100

Table 5.1.19. Communication Network Emergency Response Ranking of Variability across Individual Actors with Group Trait Based on Registration Actor Attribute

Internal	#24, #3, #32, #34, #6, #57, #107, #137
External	#51, #61, #135, #24, #93, #34, #7, #100

Table 5.1.20. Communication Network Long-term Recovery Ranking of Variability across Individual Actors with Group Trait Based on Registration Actor Attribute

Internal	#3, #32, #6, #64, #76, #24, #12, (#123, #19)
External	#93, #51, #135, #61, #3, #7, #100, #101

Overall, there was a general increase in the number of both internal and external ties across the communication network shortly after the earthquake. The trend continued into the long term recovery stage. This could be another piece of evidence that suggested the endurance of the communication network structure over time. In particular, actor #137 and #6 remained high ranking in terms of having internal group ties for the emergency stage while actor #6 was consistently having relatively high level of internal ties even through the recovery period. Among the newly emerged grassroots actors, group #3 rose up towards the top by having an increasing number of ties with non-registered actors and maintained its position over the long term. The following qualitative examinations were

conducted to understand the sources of this kind of within civil society action and institutional development.

The Case of Social Group Actor #3 (SG3[68])

There were two types of relationship-building activities being experienced by group actor SG3 after the earthquake event. As a non-registered entity, one type is its interaction with registered civil society actors. The other type is the interaction with the state sector. Regarding the former type of within sector relationship, the factor of institutional formality became less of an emphasize aspect of consideration among the civil society actors as they interact with each other. When asked about the group's non-registered status and its influence on communicating with others inside the civil society domain, the young participant recalled:

> In fact, throughout the times of our interaction, we don't really have this concept (of who is registered and who is not) at work. Whether it is our work relationships or other types of interactions, or even personal communications, this won't be an

[68] For non-registered actors, I used the code "SG" (meaning Social Group) followed by their unique number given in the network analysis. For registered organizations, I used the code "NGO" followed by their unique number given in the network analysis.

> issue at all. To be honest, I myself wasn't even clear of all these terms, like 'volunteer teams', 'NGOs', etc. (SG3-01-11[69])

First, note that she referred to the formality issue in terms of the registration status as a concept that became open to interpretation from the perspective of different civil society actors. When it came to communication relationship-building after the earthquake event, the formality of an actor was not understood as a merely an attribute status that simply distinguishes the actions of an informal social group or a formal organization, instead, what mattered was how the actor experienced its own actions in relation to those whom it provided services towards or with other civil society actors. In fact, at the early stages of communication action shortly after the earthquake, the young participant herself was not even aware of the differences between "volunteer groups" and "NGOs". In other words, communication connections among group/organizational actors were clearly not so much based on institutional formality in terms of registration status.

It is important to note the phrase that the young participant in SG3 referred to the group's interactions with civil society actors. She consistently used the term "大家" (Dajia), which has a direct translation in English means "us". But when communicated in this context, the phrase purveys a meaning of "togetherness", or more precisely, a type of

[69] For original Chinese script please refer to Appendix 5.1.5.02.

relationship structure that is perceived as "cohesive" in such a way that it identifies group/organizational actors as belonging to a larger sphere of framework. First of all, this sense of "belonging" did not derive from a "top-down" hierarchical sense of connection, but was conveyed through a presentation of civil society actors "standing" on a level ground as sharing a common aspiration in their devotion in disaster relief and long term recovery.

> …We have never thought about who belongs to whom, or any related concepts. Maybe because, for one, through such a process of getting to know each other, either by means of work or personal relations…and whenever they had a need, if not related to finances, but in terms of information or other types of consultation services, our organizers SG3-03 and SG3-02 would provide some suggestions on their projects. In other words, whenever they have some kind of needs, they would come to us. And when we organize activities, be it training or study seminars, we would send out to them. They can come if they are interested.
>
> It was not as if we were a specific bounded group, or a platform whose center is us, we have not thought of it that way. In fact, shortly after the earthquake, some of us also signed a collaboration memorandum. By that time, we were not an independent concept, the center itself is a platform. All of us are the main actors on it. That's why we signed such a memorandum. If that is so, then, the center would be more precisely in a nature of 'league', and this entity exists on performing as a platform. And there are many groups/organizations functioning on it. They had connections among each other, but not in an intensive way. Then, as people had to go back to their own work schedule after the immediate response period, the communication relationships among us needed someone to maintain their existence. Based on such concerns, an independent actor with substantive

entity-like features gradually emerged, but still functions like an intermediary connection point. (SG3-01-12[70])

Three aspects in terms of the nature of actor SG3 can be related to its institutional dynamics with the other civil society actors. First of all, the identification of "belonging together" is exemplified through the group's providing services for others not just in sharing information, but also in consultation and training. Most importantly, these interaction activities between the group and other civil society actors were also intertwined with other types of relationships among the representatives of groups and organizations. And these connections included friendships among representatives of groups/organizations built at the emotional level throughout the periods after the earthquake event.

Secondly, the emergence of SG3 from short term to long term after the disaster cannot be seen as a stand-along process. It co-evolved with the institutional development and interactions of all the civil society actors that the group was trying to support over time. Note that there was a critical difference between the characteristic of SG3 during the emergency response period and the long term recovery period. At the most primal stage of its own institutionalization process, the group was perceived less of a formal

[70] For original Chinese script please refer to Appendix 5.1.5.03.

institutional entity, but rather, could be more precisely described as a "virtual" platform that functioned to provide a bonding-friendly environment for actors to interact with each other. As time went by, especially when coming into the long term recovery stage when representatives of voluntary social groups went back to their daily work, an independent entity of SG3 slowly emerged basically to serve the purpose of maintaining the connections among all the civil society actors. The term "concept" was being used in the young participant's account as a way of representing the emergence of SG3. Essentially, the institutionalization process of SG3 started out by it being conceptualized through a relational perspective, one that characterized as being an "intermediary" performing the role of connecting and promote interaction among other civil society actors. The group is in itself an enabler facilitating a "growth-oriented" institutional climate inside the civil society domain. Its eventual establishment as an informal social group began with an emphasis on building a platform of relationships and later transformed into being willingly embedded as an actor whose identity evolution tend to be further intertwined with the connection decision-making of others. From here, we can see the importance of looking at the institutional development of civil society from a relational perspective because it could be the source of how actors identify themselves at the prime stage of emergence, and thus as a foundation for their evolution over time.

From this kind of institutional transformation, it is important to emphasize the group's identity transition after the disaster also became a stepping stone for it to sustain itself as a civil society actor practicing long term in the field of nonprofit sector. As was described by the young participant:

> At the beginning we see our entity as a center, like I mentioned earlier, meaning in the form of a joint entity ("commonwealth") and needed the participation of many member organizations. We even collaboratively signed some kind of an agreement. At the earliest times, there were 21 organizations, and then evolved until the end of 2008. After that, you could observe that the joint-entity nature of the center has gradually been less emphasized, either intentionally or un-intentionally, or due to some objective reasons. Then, we have not actively raised the concept of "member organizations. (SG3-01-12[71])

> We are servicing other organizations, this 'service' identity originated from our intention to provide assistances to those other civil society groups/organizations that were conducting disaster related works. But in fact, we would provide services to all of those civil society groups/organizations that come to us for help or assistances. Therefore, we gradually would no longer talk about the concept of 'member groups/organizations. (SG3-01-13[72])

As we can see, the evolution of the institutional identification for the group itself was also accompanied by an expansion of services towards the development of civil society actors in general rather than bounded to particularly those focused on disaster recovery. What was being exemplified here could be referred to as the beginning stage from which the actor SG3 originated from a crisis situation and gradually emerged into a non-disaster-

[71] For original Chinese script please refer to Appendix 5.1.5.04.

[72] For original Chinese script please refer to Appendix 5.1.5.05.

related nonprofit group functioning as a long term coordinating and servicing partner for other civil society actors. This stage was essentially characterized by civil society actors functioning independently from each other without a hierarchical orientation by categorizing themselves as members within a larger organizational entity. What can be inferred was that over time, especially after the emergency response period, actors inside the civil society domain indeed valued independent growth from a grass-root "bottom-up" approach. Such a tendency could be characterized as a starting phase that signifies a "standing up" Chinese civil society in the context of after a catastrophic disaster. This standing-up character can also be demonstrated by the ability of civil society actors to form organizational network relationships among themselves.

> We have not intentionally count the exact number, but roughly speaking, those who have had connections with us, either in the type of communication or collaboration, can sum up to at least 300. This is probably one of the biggest resource assets of the center since its establishment three years ago. It has created these relationships with other groups/organizations in pretty good terms. (SG3-01-14[73])

In terms of the types of interactions within the immediate network neighborhood of actor SG3, the relationships can be categorized into the following based on the account of the young participant (SG3-01). The first type of communication relationship arose

[73] For original Chinese script please refer to Appendix 5.1.5.06.

from the need of group SG3, functioning as an information coordinator, to gather information from other civil society actors performing disaster recovery works in Sichuan Province at the time. In these incidences, SG3 will reach out to them first by phone or email. The requested information will then be posted as "work briefing" on the website of SG3. As the person in charge of this section of the duties, the young participant also enthusiastically planned to design the website in such a way that "when you get online, you'll be able to click open a map of Sichuan Province, and at the same time you will see the location of each group/organization's recovery related projects, as well as which project was completed and which ones are ongoing…". The second type of communication tie arose from the needs of other civil society actors towards the services provided by SG3. In these cases, other groups/organizations will initiate the communication connection with the group. In terms of work contacts, these will be incidences when they would have needs for information support or other kinds of assistances. During the transitioning period from emergency response to the recovery phase, these types of support including arranging temporary housing and helping in purchasing tickets for traveling were strongly demanded particularly from those civil society groups/organizations coming from outside Sichuan Province (SG3-03). Another sub-type of the incoming nominations arose from the need for coordinating available

temporary spaces or logistic assistance when civil society actors were interested in organizing trainings or activities. Different from these two types of work-related communications, the third kind of connection can be categorized as emotionally-related personal friendships. "As more young people are joining in this 'circle', we more or less share some of the same hobbies or interests together, particularly when we were spending our leisure times hanging out with each other. At other times, (some work-related connections) might be sparked by us young people sharing off times" (SG3-01). From here, the nuances of how work-related communication networks among civil society actors were actually intertwined with other types of network environments. The last type of communication means was through an online interactive medium called "QQ group" where all kinds of information can be posted by civil society actors. For example, group SG3 could send out invitations towards others to inform them of the opportunities for participating in training programs. Postings could also be in the form of actors searching for volunteers and posting their requests through this interaction medium online. This would usually lead to faster responses.

One other point that deserves further elaboration is the decision-making processes behind the institutional structural change of the group SG3 through emergency response to long term recovery phases. For this group actor in particular, the time when the entity

as a whole had to decide whether to continue the function of the original information platform came in June 2008, which is about a month after the earthquake event. According to the reflection of one of the senior participant, there were two sides of opinions among the participating civil society actors. One side argued that since the emergency response period has already passed and the involved groups/organization could establish their own local branches in the local communities that they intend to provide assistance towards. Therefore, there were no needs of the continuation of such a platform. Other civil society actors, particularly those smaller grass-roots coming from outside the Sichuan Province, strongly raised their voices in preferring the sustaining of the function of the platform.

> If this platform had not existed, they would face significant difficulties, especially those coming from outside the Sichuan Province. This is because when it was just one month past the earthquake event, NGOs from all over the country would gather there, and they would have special needs for assistance. As they would often say that they weren't familiar with the local culture. (SG3-02-03[74])

The result of the discussion was that the group as a whole decided to continue its existence with a more sustainable form toward an institutionalized structure instead of being simply a group of volunteers coming together helping out with the emergency response efforts. Such a transitioning mode was defined as the group performing a type

[74] For original Chinese script please refer to Appendix 5.1.5.07.

of project support in order to preserve its identity and functioning[75]. In summary, the tendency for actor #3 to be increasingly active in building communication relationships with other non-registered actors could be attributed to three factors. One is its pursuit in developing platforms for information exchange thinking beyond the stages of disaster response and recovery. Secondly, it became increasingly aware of the co-evolution of its own functioning with all the other civil society actors. Thirdly, recognizing the "togetherness" with others working in the field and sharing a common aspiration for long term social development also contributed to its continued connections with those newly emerged non-registered social groups.

Alongside with other civil society actors that emerged as key players promoting communication inside and between groups, actor #24, also became one of the most active agents in both fields of having internal and external ties shortly after the earthquake. This type of action cannot be separated from how the actor cared and perceived the institutional environment of Chinese civil society actors in general.

In fact, the informant of the organizational actor #24 (NGO24-01) held a rather positive outlook to the general institutional environment for the future development of

[75] For detailed account, refer to Appendix 5.1.CaseSG3.4

grassroots groups and NGOs. He perceived that the government actually was "slowly starting to realize the importance of NGOs and was gradually re-directing its attitude towards us". According to the recall of the director, it had stated clearly in year 2011 twelfth fifth year plan of the important role of social development in disaster mitigation and preparedness. And the need to discover a process incorporating the collaboration efforts between the government and NGOs, and thus the development of a "big society" was stressed among all the main tasks that the government needs to perform. As he was describing these observed progresses in government policy orientations, the director finally stated that "I believe that the development of existing (institutional) environment will be in more and more favor of the survival of NGOs" (NGO24-01-02).

> LU：Then, how should one raise the government awareness of the importance of NGOs?
> NGO24-01: In fact, there is a gradual change in government's attitudes towards NGOs and they started to recognize our importance. For example, in the twelfth five-year plan, it raised the importance of social development and its role in the process of disaster mitigation and preparedness. In the plan, one of the critical tasks raised for the government is for it to manage well-functioning collaborations with NGOs and nurturing the development of 'big society'. So I believe the surviving institutional environment for NGOs will keep getting better. (NGO24-01-02[76])

Aside from a positive attitude toward the institutional environment for the future development of civil society actors in building up the social capacity for disaster

[76] For original Chinese script please refer to Appendix 5.1.5.08.

mitigation, there was one other driving factor that could explain the higher concentration of within-group and cross-group communication activities after the earthquake. The actor not only cared for the development of indigenous sources and strength on the part of Chinese civil society for disaster recovery purposes, it also had a long-term vision in the general trajectory of social capacity-building for China. For example, the informant talked about several internal difficulties arose within grassroots groups and NGOs themselves which contributed to the additional burdens for these civil society actors to grow over time. One was the lack of the funding sources and the shortage of it could further hinder the "professional capacity-building". The other internal factor was regarding the types of activities particularly chosen by the voluntary groups after the earthquake event. To the informant, many of these informal voluntary groups rushed into the disaster hit areas to focus more of their attention on emergency response activities alone. And less attention was being paid to the long term recovery aspect of activities being established at that period of time. Therefore, the actor's thinking not only went beyond the care for its own post-earthquake activities but also went toward the growth process of other civil society actors in the field in terms of building up the social capacity to withstand future crisis. These motivations promoted the shift of expansion in both within and cross-group actions after the earthquake.

One other distinguished feature of the ranking of external group ties across actors was that actors #51 maintained to occupy highly active positions in communicating with non-registered actors. It established the highest number of group external ties for both the response and recovery periods. Because of its persistence in engaging non-registered actors with information exchange, it would play a significant role in developing policy interventions that aim at breaking down the tendency for group segregations based on actors' attributes and at enhancing diversity composition of the communication network, particularly in the case of disaster preparedness planning.

The Case of Actor #51 (NGO51)

In this research, I distinguished three types of civil society platform-building initiatives. Recall that one source of motivation in platform-formation was to provide an environment that welcomed and facilitated the communication and information sharing among civil society actors in general. The primary example for this kind of role formation was revealed through the actions of actor #3. Its platform initiative was also being sustained through the transitioning from emergency response to long term recovery. The second type was one that emerged for facilitating not just for connections among

civil society actors but also for cross-sector communication and collaboration relationships through building a particular field of practice. For some actors for instance, the field specialty was chosen to be in youth education and development. Thirdly, from the example of actor #51[77], I found another type of platform initiative in the form of facilitating capacity building for civil society actors. Through the emergence of various community development programs throughout the earthquake-impacted areas, an institutional environment that could enhance an in-depth understanding among actors across the civil society, the state, and the market domains was gradually being cultivated. This thus became a collaborative learning experience not just for the growth of civil society actors but also for enhancing the strength of cross-sector initiative in field practices. In later sections, I will provide a detailed account of how this process was being initiated and conducted through one field project implemented by actor #51.

For now, let me focus the attention on finding out the driving forces for actor #51 to engage in cross registration group activities both before and persistently after the earthquake. After establishing a formal field office and gained an official registration status in Chengdu, the actor's original motivation in participating in the earthquake recovery gradually expanded towards functioning areas related to long term social

[77] For interview accounts on this topic, refer to NGO51-01-03 in Appendix 5.1.5.09.

development. Some of them included being an "incubator" for emerging civil society actors, establishing community service platform, as well as civil society capacity building. The common thread these areas of specializations had was a devoted concentration in the institutional development of the Chinese civil society domain. By "institutional development" in this context, it incorporates three levels of interpretations. One is at the level of individual civil society actor, incorporating the meaning of an emergence of a formal type of organizational structure from informal social or volunteer groups. The other one is at the relational level, incorporating the establishment of long term communication and collaboration connections among civil society actors. The third level of understanding is a combination of the first and the second, meaning that the capacity of one civil society actor is developed through a process of interacting with others. The following illustrated how the case of actor #51 exemplified this third type of institutional development through its field actions[78].

> The civil society groups/organizations that we aim to develop are like this. One is that they participate into our own programs. Aside from our N programs, we also will introduce some groups/organizations into other programs established in the high-tech district in Chengdu. For these kinds of groups/organizations that have collaborative relationships with us, we will do our best to nurture their growth. This is firm. The other one is our "incubator" program. This is particularly designed for assisting the growth of civil society groups/organizations. So as long

[78] For further detailed account, refer to Appendix 5.1.CaseNGO51.2.

> as they have communication relationships with us, we will be responsible to train and 'bringing them up'. (NGO51-01-04[79])

From the informant's perspective, a "collaborative" relationship incorporated two types of actions. One was through the participation of its community development programs by being a "third-party" civil society group or organization assisting in running the local community centers. The other route was by being "incubated" through one of the civil society capacity development programs. Both types of relationships counted towards "collaborative" connections between other civil society actors and actor #51, while at the same time they inherently provided a nurturing and enabling environment for the growth of each partnering civil society actor by nature of each of the program goals[80].

It can be concluded that the high level of communication between actor #51 and non-registered social groups mainly originated from its goal in supporting the institutional development of civil society actors through the nurturing of collaborative relationships. This type of relationships in-turn promoted the construction of a communication platform for the involved parties to further share and exchange information, thus providing possibilities for facilitating capacity development among actors across the civil society, the state, and the market domains.

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[79] For original Chinese script please refer to Appendix 5.1.5.10.

[80] See NGO51-01-05 in Appendix 5.1.5.11.

Different from actor #24, #3 and #51, actor #123 first emerged to become one of those actors that had higher level of group internal ties only during the long term recovery stage. Since actor #123 was a non-registered social group, the higher level for its internal group ties represented that it had been particularly active to communicate with more informal civil society actors especially during the long term recovery period. Therefore, I further examine the origin of its emergence at the group level in order to qualitatively trace the origin of such actions.

The Case of Actor #123 (SG123)

When inquired regarding the motivations for forming both communication and collaboration connections that these two actors, the motivation to seek appropriate funders became an important issue.

The organizer distinguished two types of foundations from which the group could seek funding from at the time. One is called the "private foundations" (私募基金会) and the other is "public foundations" (公募基金会). While both could possibly provide funding for the group, the preference is given towards the former. The reason is that, in comparison to the "private foundations", funding from the official channels through the

public foundations will often provide less "maneuver room" for the fund seeker to perform stand-alone tasks that are independent of the possible "influences" from those operating the public foundations. On the other hand, funds coming from private foundations would provide more freedom for the seeker to manage tasks in a way that fits the need of the field activities themselves.

> Knowing (actor #125) was due to my own effort to find funding and had to travel to Beijing to meet them. I personally prefer the private foundations (as compared to public foundations), like ND foundation, and TX, and many other nongovernment-related foundations. This is because many of the government-related public foundations are more being controlled by bureaucrats. Once you join and apply for their money, you will be skimmed off and used for their purposes and will instead become one of their tools to draw money for themselves. Even if you were successful in your application, a lot of the money will be deducted and go to their own pockets. What's left-over for us will be very slim. But for private foundations like (actor #125), their focus is on getting some real work done, and the source of their employees' salary was provided by (the founder himself). (SG123-01-03[81])

Essentially, what the organizer valued the most with its funding relationships with the two private foundations was that their provision of not only the funds needed perform group's desired tasks, but most importantly offered an opportunity for the group to develop its own capability in functioning. Just as expressed in his interpretation of the "standing up" role of NGOs in relation to the general mass and the state, the ability and

[81] For original Chinese script please refer to Appendix 5.1.5.12.

the freedom to do what the group values in the best interests of those whom it serves, is critical in the process that the group built its relationship partners over time.

Another within sector connection the group established during the emergency response stage was with actor #3. At the time immediately and short-term after the earthquake, actor #3 was perceived as an important "mediator" connecting the needs of information across civil society actors. Note that it was indeed the primary goal set by the organizers of actor #3 at the time of its establishment. However, over time, when it came to the training programs coordinated and provided by actor #3, the organizer of group 123 described his frustration in the materials that had been taught and passed on. One comment he made was the gap between the theoretical content of the training and what was happening in the field. This discovery eventually led the group 123 to drop its communication nomination towards actor #3 during the recovery stage. From a policy-making perspective, what this process revealed is that as civil society actors grew and matured in different stages, the tools that were needed for them to conduct activities and practice in the field diverge. Although theoretical background learning experiences were essential in developing a way of thinking in terms of a "bigger picture" in social development, they seemed to be afar from what the group faced in reality. However, this does not cancel out the contributions of actor #3 in performing a role of assisting civil

society actors building up opportunities to learn and share experiences among each other. From the prior investigations, recall that the actor itself was also embedded in this process of learning and adjusting its role over time. It is therefore a "collaborative learning" experience for all the participating civil society actors to develop a type of dynamic that not only enhances their relationship with each other but also the effective tools they are able to select when providing services towards the local communities. If a policy measure could facilitate such a process of relationship development while at the same time providing guidance in civil society actors' capability development for initiating further innovations in tool-searching, a policy design for social "resilience" could emerge. But the key here is to let the "agency action" side of the civil society reveal itself over time[82].

In general, the changes in both external and internal group ties listed in tables 5.1.16 and 5.1.17 can be seen as important components of structural fabrics that contributed to the social resilience especially at time of catastrophic changes brought upon by nature or man-made. On the one hand, an increasing number of both registered and non-registered civil society actors quickly emerged in assuming the role of promoting communication flow both internally and externally. Identifying them and understand the

[82] For further account, refer to Appendix 5.1.CaseSG123.4

factors that contributed to their participation in the network could be critical for policies that are designed to facilitate the speed of emergency responsiveness on the part of the civil society. On the other hand, some of these actors were also able to sustain their role in terms of maintaining the number of group internal and external ties throughout the different stages of time. When a policy measure is designed to enhance the capacity-building of the civil society actors for long term disaster recovery and mitigation, it will be important to identify actors whose embeddedness in terms of internal and external group behavior endured beyond just the emergency stage after the disaster event.

Structural Foundations of Agency Action

Overview

In the last section, I examined how communication structures were being constructed from a micro-level perspective starting at reciprocation stage to the group interaction stage. Another way to investigate the impact of action on the structuration process is through a macro-level perspective by directly examining the larger sub-structures.

In this section, I will examine the possible kinds of groupings that civil society actors exemplify throughout the periods before and after the earthquake. Investigating the changes in macro group structures deciphers how civil society actors whose relationships constituting the network environment as a whole evolved and was likely to behave. The findings can serve as the pre-conditions within which micro-level interactions can occur. Furthermore, it is important to look at such sub-structure activities because these structural formation behaviors tend to have critical policy implications in the context of disaster response and recovery. For communication networks, the formation and development of micro sub-structures at different levels can be used to identify key actors who can perform the role of facilitating the information flow among groups in order to enhance the overall cohesiveness of the network. For collaboration networks, actors' attribute characteristics and their areas of specialization can be used in combination of their structural grouping behaviors so as to design possible projects that encourage collaborations across sub-structural boundaries. Here I will focus on the communication network environment and next chapter will be devoted to closely examine the collaboration networks.

In sub-structure analysis, there are generally two levels of perspectives to investigate the different stages of existence and composition. One is at the macro-level by

looking at the connectivity of the whole network. The other is at the micro-level by examining the smaller and denser communities within the larger structure and how they combine together to form the larger network environment. In the following section, I will start out with a macro-outlook and then further break down the investigation into smaller sub-groups.

Top-down Approach

Component

The primary indicator of identifying the macro-grouping activities is the concept called "component". The identification of *weak components* in a network does not take into account of the direction of a tie. As long as there is a set of ties connecting and linking the actors together, this set of actors are named into one group of weak component. For information exchange and communication networks, this perspective allows one to observe whether there is a general connectedness among the actors. Those that are not included in the main component regardless of directions of the ties will be listed as "isolates". Figure 5.1.5 illustrates the weak component communication structure at the time stage before the earthquake.

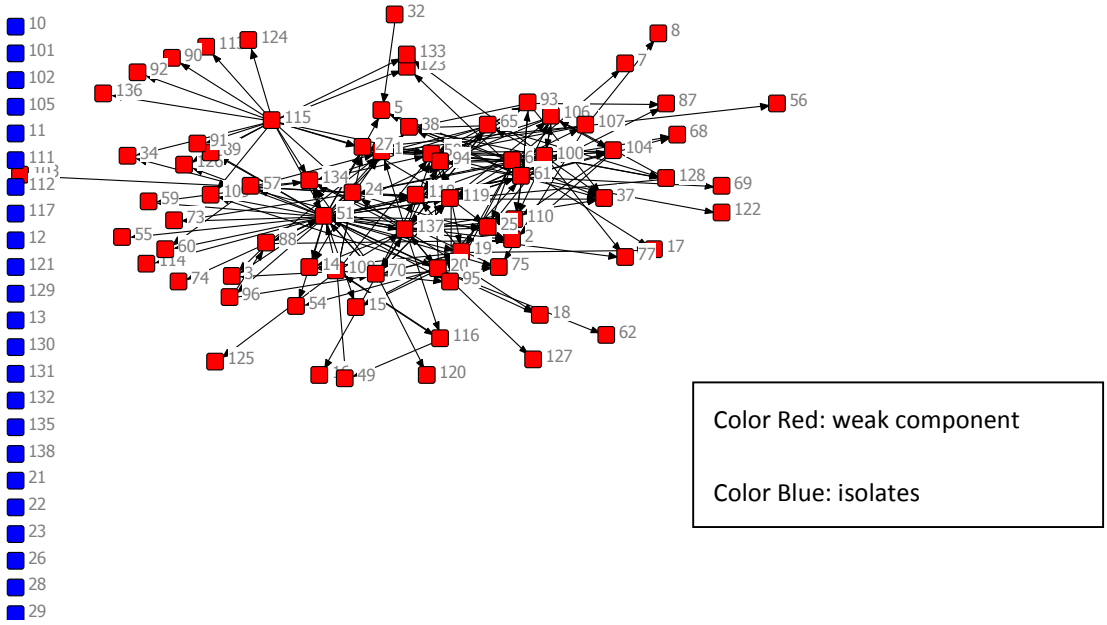


Figure 5.1.5. Communication Network Pre-earthquake Weak Component Structure

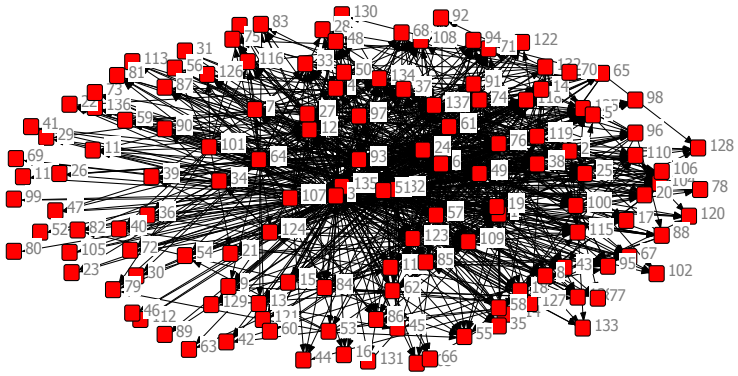
We can see that all the connected actors were colored in red as one large component. The isolated actors are colored in blue and being listed on the left side of the graph. The analysis output of the weak component structure indicated that there were 63 of them found at the time stage before the disaster. Clearly, those 76 actors who happened to be connected with each other were being identified as in the same component. Each of the rest of the 62 actors was being categorized into a separate component. Among them, recall that some were civil society actors that were not in existence at this stage of time. The dramatic change in the weak component structure came immediately after the earthquake. The first column of table 5.1.21 below shows that

all of the previously non-existent and non-active actors were being drawn into the main component and as a result, there turned out to be only one large weak component structure.

Table 5.1.21. Development Stages of Weak and Strong Components in Communication Networks

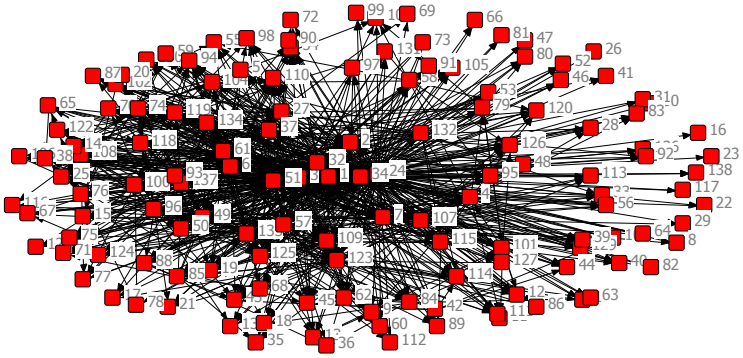
	Weak Component (Action)	Strong Component (Condition for Institutionalization)
Pre-earthquake	63	121
Emergency Response	1	91
Long-term Recovery	1	91

From the whole network perspective, this dynamic indicated that the actions inside the civil society domain exemplified a tendency to enhance the cohesiveness of the communication network. And such an overall integration process was able to persist over time through the long term recovery stage. The network remained to be intact with all the actors being connected to one or the other regardless of who initiated the contact. Figure 5.1.6 and figure 5.1.7 below graphically illustrated the changes toward such integration in the connection structure short term and long term after the earthquake.



Component 1: Color Red

Figure 5.1.6. Communication Network Emergency Response Weak Component Structure



Component 1: Color Red

Figure 5.1.7. Communication Long-term Recovery Weak Component Structure

When direction of the communication ties were taken into consideration, another way in distinguishing actors is by imposing a constraint requirement in deciding the inclusiveness of the structure. A *strong component* is implemented by only counting those with a directed path from one to the other in order to be listed into the same component. Essentially, this measure takes into account of the tie direction among actors and those listed in a strong component were actually able to reach out and communicate among each other. This kind of communication bonding is stronger than those identified in the weak component. As far as the strong component is concerned, it would be ideal for all actors to belong to one large communication group. This is because in the context of disaster response and recovery, information will not be as easily transferred across different components as compared to among those within the same component. Therefore, the more the break up the network in terms of the number of strong components, the more segregated actors across groups will be, as it can be expected. From table 5.1.21, we can see that there were 121 strong components found during the time before the earthquake and that was nearly two times more than the number of weak components during the same period of time.

This showed that when directions of ties were taken into account, the communication network structure before the earthquake was divided into more sets of

actors among whom had directed paths among each other. With the emergence and actions of newly formed groups and formal nonprofit organizations shortly after the earthquake, the formation of network inclusiveness was accompanied by a decrease in the number of strong communication components. What this indicated was that the information exchange patterns in the civil society domain became more integrated as a whole with less strong component grouping behaviors. Such a trend remained stable during the long term recovery period suggesting that there was no further general "segregation" in terms of the communication actions among civil society actors. Thinking in terms of the role of an information exchange network after a catastrophic disaster, the turning point in dynamic patterns of change for both weak and strong component-creation behaviors shortly after the earthquake signified two things regarding the overall structural development of the civil society domain. One is regarding how the function of agency action in times of crisis was to be perceived for the Chinese case. If the agency action alone was being considered, the changes in the numbers of weak components revealed an important characteristic of action in the civil society domain. And this can be summarized as a kind of energy or force that pulled communication activities into an integrated whole where all actors were linked together regardless of who initiated the contacts in the first place. In other words, action, in the first place, promoted completeness in the connection

structure. The other point is that compared to the period before, the communication structural environment moved in such a way that created fewer barriers for actors to access and distribute information. Given the consideration of the direction of an initiated action, actors also created opportunities for themselves to exercise the choice discretions on whom they aim to reach out towards. In order to depict the sources and emergence of the available choice sets among which actors were able to choose from, it is necessary to examine the grouping activities from a "bottom-up" perspective and I will provide further detailed discussions in the next section.

K-core Analysis

In the previous section, I identified the "component" structures as the primary way to understand the formation of sub-groups. The concept was used here to emphasize on the general "connectedness" of structural development and it was helpful in depicting how actors were being drawn into the network structure over time. As more actors were being connected to each other either through an incoming or an outgoing tie after the earthquake, we saw that the main component structures in the communication network

expanded dramatically after the earthquake and maintained its integrated-ness all the way throughout the long term recovery period.

However, when closely observing the graphic display of the connectedness transformations of the communication network (Figures 5.1.5, 5.1.6, and 5.1.7), it became clear that there were actors positioned themselves on the periphery of the network, such as being "hangers", "bridgers", "isolated trees", and "isolates"[83]. When the interest of the study is to identify the "core" set of actors that tightly knit the network structure together, I look at the *k-core* structures of a graph. This method probes into the inner-most areas of the component structures and finds a core with intensively cohesive and connected actors. In terms of understanding the emergent structures of civil society resilience, it is critical to identify these core set of actors and observe any changes in their "nested-ness" inside the larger component over time.

During the period before the earthquake, the k-core output results[84] showed that the core set of actors was found at the 5k-core level. This can be interpreted in the following manner. At the lowest level of cohesion, a 1k-core simply represents all of those actors that had at least one connection with each other and the boundary of

[83] For definitions of these concepts, refer to Network Concept table in Appendix 4.3.

[84] Please see Appendix 5.1.5*B1* for K-core UCINET output results.

inclusion can be rather extended such as the weak component structure I identified in the last section. As we increase the level of connection intensity to 2k-core, which means that all actors with a degree of 1 are ignored, the number of actors inside this boundary became less. As the cohesiveness level is being defined "stronger" by requiring only those with higher degree measures to remain inside the core boundaries, the findings eventually showed set of core actors at the 5k-core level. This means that actors with degrees (regardless of directions) of 4 or less were being excluded from this core structure. In other words, only those with a connection with 5 or more others will be counted as part of the core. Therefore, Figure 5.1.8 illustrates this identification of the different levels of k-core groups by node colors.

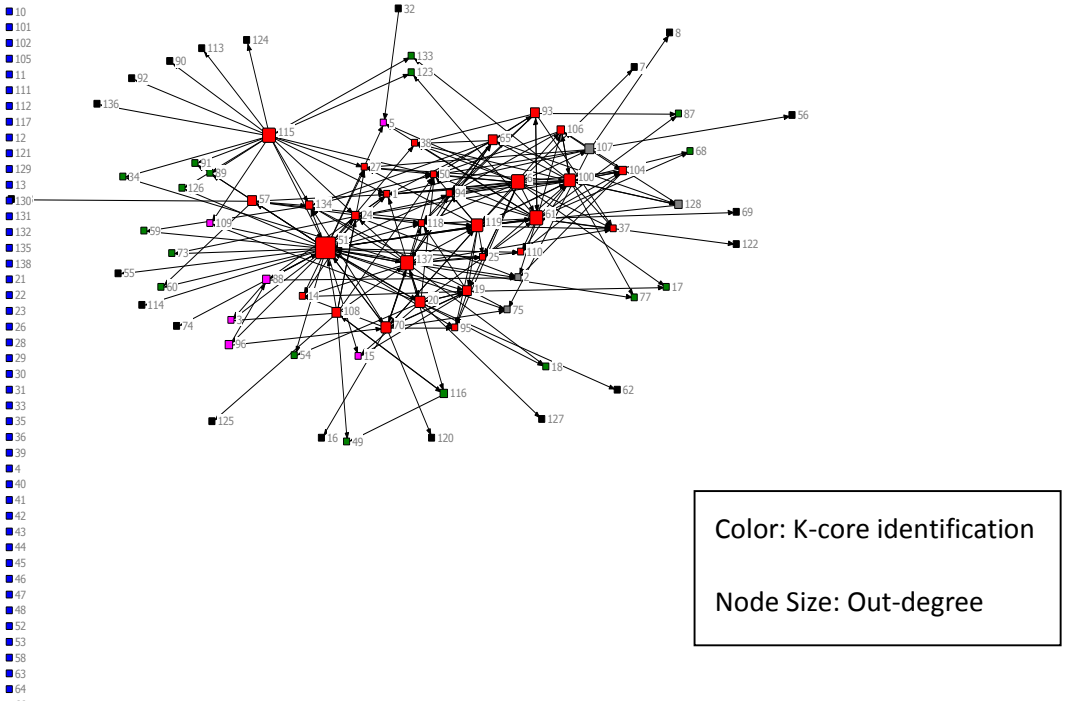


Figure 5.1.8. Communication Network Pre-earthquake K-core Structure

The core set of actors were being identified with red color located near the center of the graph. By definition, these actors were the most cohesively and intensively connected with each other during the time before the earthquake. As cut-off level of cohesiveness is gradually being weakened, the boundaries are being stretched to include more actors and eventually include the single component.

What is worth noting here is that the state aggregate represented by actor #1 was inside the core structure at the highest 5k-core level. This evidence further demonstrated that the government agencies, from the perspective of civil society actors, did play an

important part in participating in the most intensely connected section of the information sharing component structure. The market sector joined the 4k-core as the boundary is being relaxed.

For the emergency response period, the core set of actors was being found at a dramatically higher level of k-core[85]. The most stringent level of cohesiveness was found by excluding those actors with a degree of 12 or less. Therefore, those actors who were in the core had at least 13 communication connections among themselves. What this means is that the core structure became more tightly-woven- together right after the earthquake as compared to before the disaster. The nodes with red color in figure 5-1-9 represented those actors who were counted as part of the 13k-core structure.

[85] Please see 5.1.5*B2* for sample K-core results.

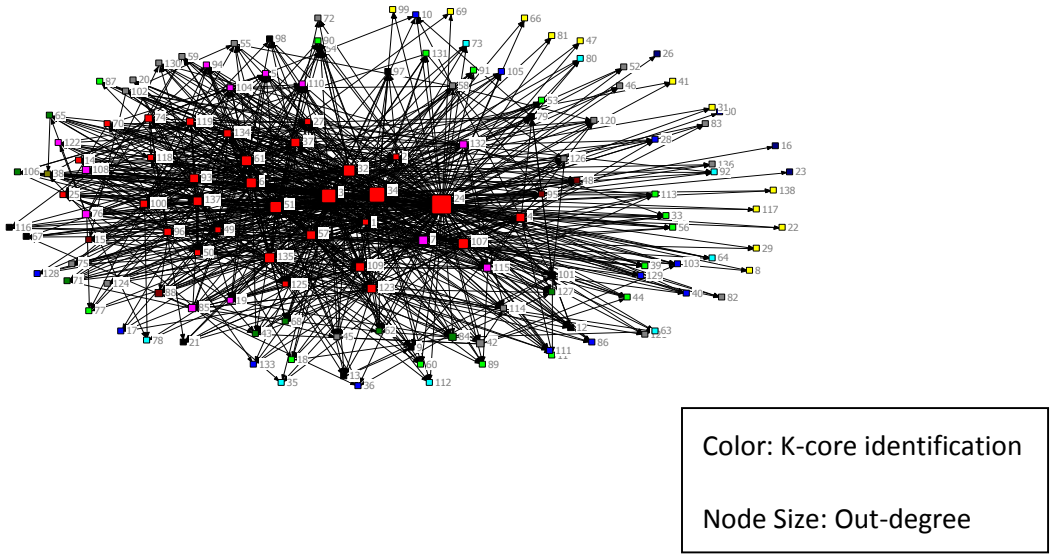


Figure 5.1.9. Communication Network Emergency Response K-core Structure

Visually observing the graph, these core actors were all located in an area with higher density where communication actions were intensely embedded among the actors. Also note that at this period of time, the private sector represented as actor #2 joined the core structure. This signified that the role of the market system in disaster response was being particularly recognized by the civil society actors. At this time stage, both the state and the market domains were part of the core structure. This was a primary piece of evidence showing the intensity and cohesiveness of bonding among the three domains—civil society, state, and the market—at a time of crisis. What remains to be seen was whether such a bonding mechanism can be sustained over time as a sign of institutionalization of the relationship structure among these three domains.

For the long term disaster recovery stage, the core structure was found at an even higher k-core level than that of the emergency response period. The core set of actors engaged in information exchange at the 14k-core level[86] and this means that only those actors that had 13 or more communication ties with others will be included in the core structure. The intensity of relationship was one degree higher than the boundary defined in the emergency response stage. This structural development showed that the intensity of connection among the core members not only sustained but also rose to a higher level over the long term. This point can be demonstrated graphically by observing figure 5.1.10 below.

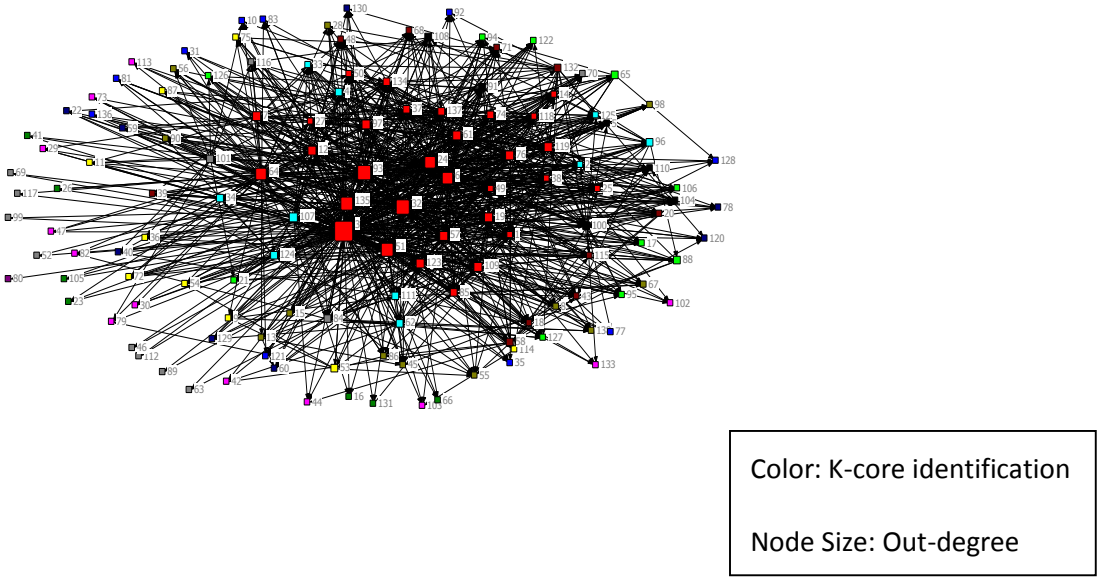


Figure 5.1.10. Communication Network Long-term Recovery K-core Structure

[86] Please see Appendix 5.1.5*B3* for sample K-core output results.

The state actor still played a critical role in contributing to the connectedness at the 14k-core level. The market actor, on the other hand, did not join the state to be counted as part of the core at this level of cohesiveness. But it made it to the core when relaxing the constraint to 13k-core. In figure 5.1.10, the actors in the 13k-core were shown by nodes with color red and the color of light blue. The light blue ones further expanded the boundary of the core set with 14k-core intensity.

Overall, actors inside each of the component, especially those within the core structures remained to be tightly bonded together over the long term. Rather than becoming disintegrated, the evidences presented in this analysis showed an increasing intensiveness and cohesiveness of connection from the emergency response period to the long term recovery period. The state and the market domain became intensely bonded with the civil society actors shortly after the disaster, and such "attraction" dynamic remained throughout the recovery stage. What can be inferred from this type of core identification analysis was that the cohesiveness among actors with high out-degree measures had not been a temporary structural change. The increasing tightness among the k-core actors can be interpreted as that the communication agency structure not only among the civil society actors themselves, but also among domains of state, market and

civil society showed signs of being institutionally transformed towards long-term cohesiveness and connectedness.

Community Structuration in Information Exchange

The Concept of Community structure (Girvan-Newman Modularity)

In order to look further into the structuration process, it is necessary to go one step further to examine the existence of possible community structures. By "community", I interpreted it as groups of actors that are tightly knit together among themselves but only loosely connected between groups (Girvan and Newman, 2002). The general purpose of this part of the investigation was to develop a lens through which to understand social grouping formation and change process before and after a crisis situation.

The Girvan-Neman community structure detection method focuses its attention on the importance of tie connections rather than actors. It calculates the betweenness centrality of a tie, which is defined as the number of shortest paths between pairs of actors that run along it. The difference between the betweenness measures that I have discussed earlier and the one being used here is that the former pays attention to the role of actors while the latter focuses on the role of connections. Essentially, the interpretation

of such a role played by one communication or a collaboration tie is that the higher the betweenness measure, the more loosely connected communities had to go through this connection in order to reach to other communities at the shortest paths. In other words, if these ties are being removed, various groups will be singled out and separated from each other. This way, different communities are being detected. The discovery of any particular connection that played a critical role in forging relationships between groups that would otherwise be separated would indicate that in the emergence process of the communication structure after a disaster, it was not only the actions themselves mattered, to whom a tie was connected to and the direction of the tie also mattered in holding up and maintaining the connectedness of the structure of the network.

Communities in Information Exchange Network (Girvan-Newman Detection Method)

Using this method, I examined the changes in community structure for communication networks before and after the earthquake. Besides observing the changes in grouping structures, the out-degree measures and the actor attribute of registration status were also being added in the graphical representations for each period of time. This

was done to depict any patterns of community structuration that can be related to actors' outreach intensity and registration status.

Starting from the period before the disaster (see figure 5.1.11), the color representations in the following graph illustrated the different communities detected.

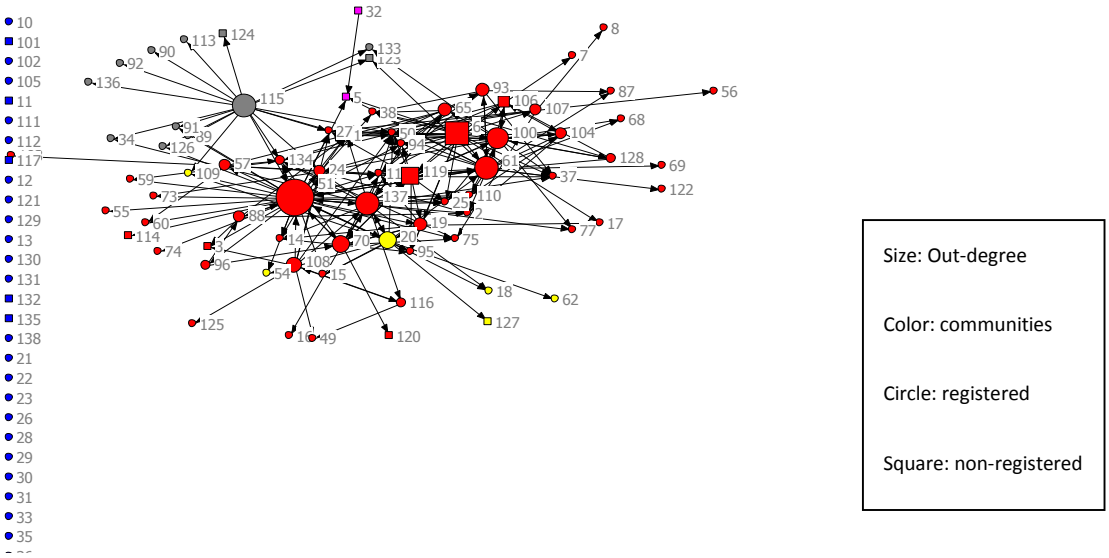


Figure 5.1.11. Pre-earthquake Girvan and Newman Community Structure-Communication Network (Highest Q Modularity Value=0.136; 4 Communities Found)

Note that within the main connected structure, four groups were being discovered. The largest community in conducting information exchange was among those nodes with red color. Most of those who were active in initiating communication ties were being detected in this largest community. Three other smaller ones colored in grey, pink and yellow were being singled out at this point of time. Note that actor #32 would be cut off

from the rest of the network if it had not initiated a contact with actor #5. In a structure like this, the only way for those in other communities to have access to the information that actor #32 offered was through its connection towards actor #5. The functioning role of the latter in this case was similar to one of a "messenger" in connecting actor #32 to the more connected section of the network. Such a role can also be found for actor #115 and actor #20 inside their own groupings. In general, there was certain degree of separation inside the communication network structure and various communities were being detected for the time stage before the earthquake.

Figure 5.1.12 showed the result of community detection during the period shortly after the earthquake.

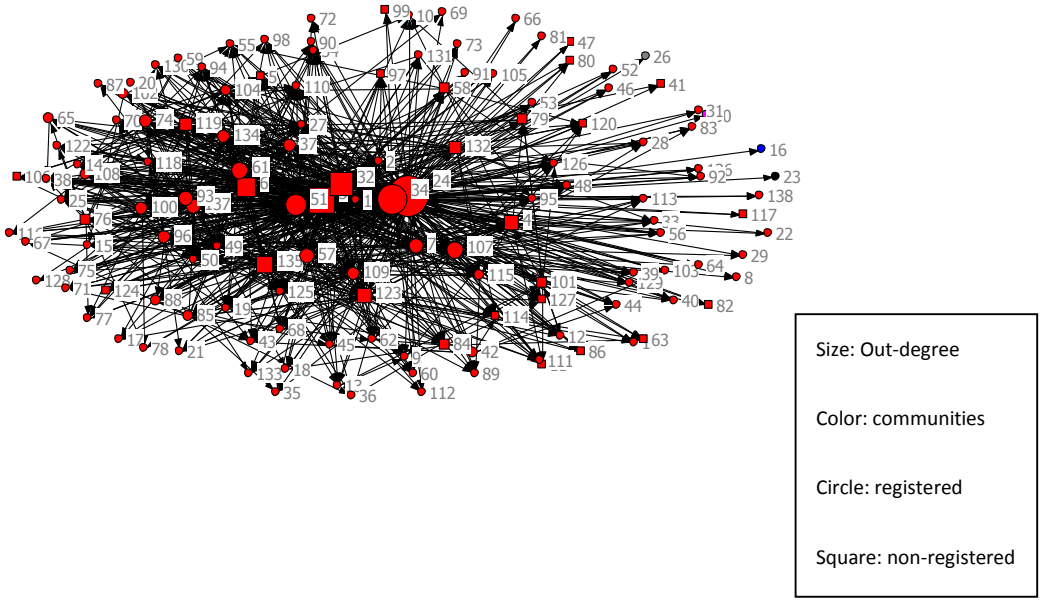


Figure 5.1.12. Emergency Response Girvan and Newman Community Structure-Communication Network (Highest Q Modularity Value=-0.000; 5 Communities Found[87])

With more previously isolated actors joining the network and the emergence of new groups and organizations, this time period was characterized by a pattern of full integration of actors regardless of the level of outreach activities and the registration status. One major community was being detected with the majority of the actors being included except for three actors on the periphery of the network structure. What could be inferred was that the happening of the disaster event became a turning point for civil society actors to be tied together by communication actions. For connections that are

[87] Actor #26, #30, #16, and #23 were found to be 4 separate communities each by themselves. The rest of the actors were all in one community.

being built for information exchange, such integration dynamics would be working in favor of getting most important pieces of information through the structure within the constraint of time, especially for providing timely assistances in allocating resources for the emergency response efforts. Surprisingly, based on the Girvan-Newman detection method, this "one-ness" of community structure was also being maintained all the way through the long term recovery period (see figure 5.1.13).

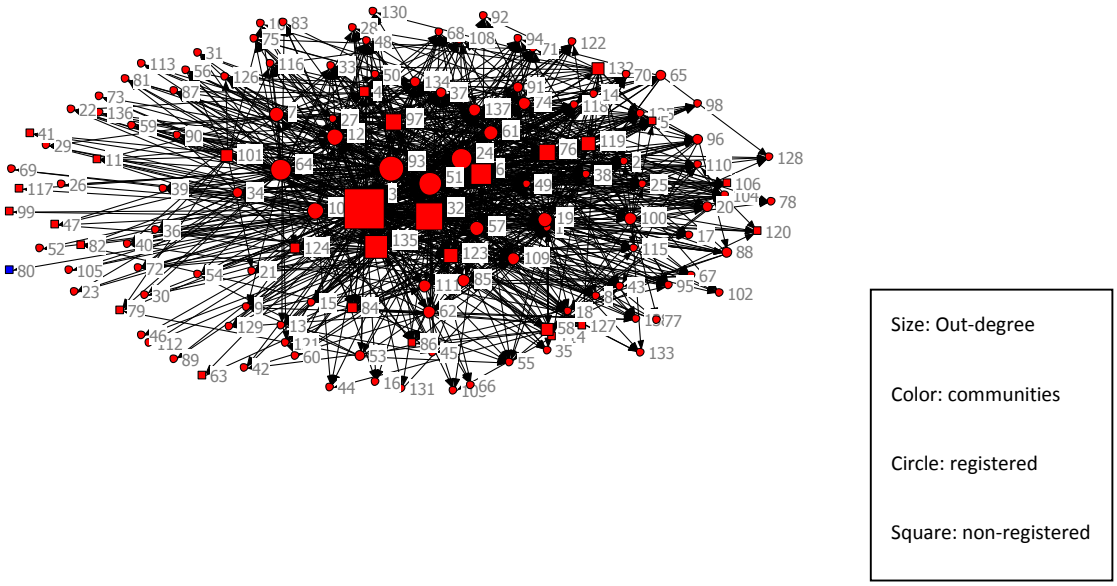


Figure 5.1.13. Long-term Recovery Girvan and Newman Community Structure-Communication Network (Highest Q Modularity Value=-0.000; 2 Communities Found[88])

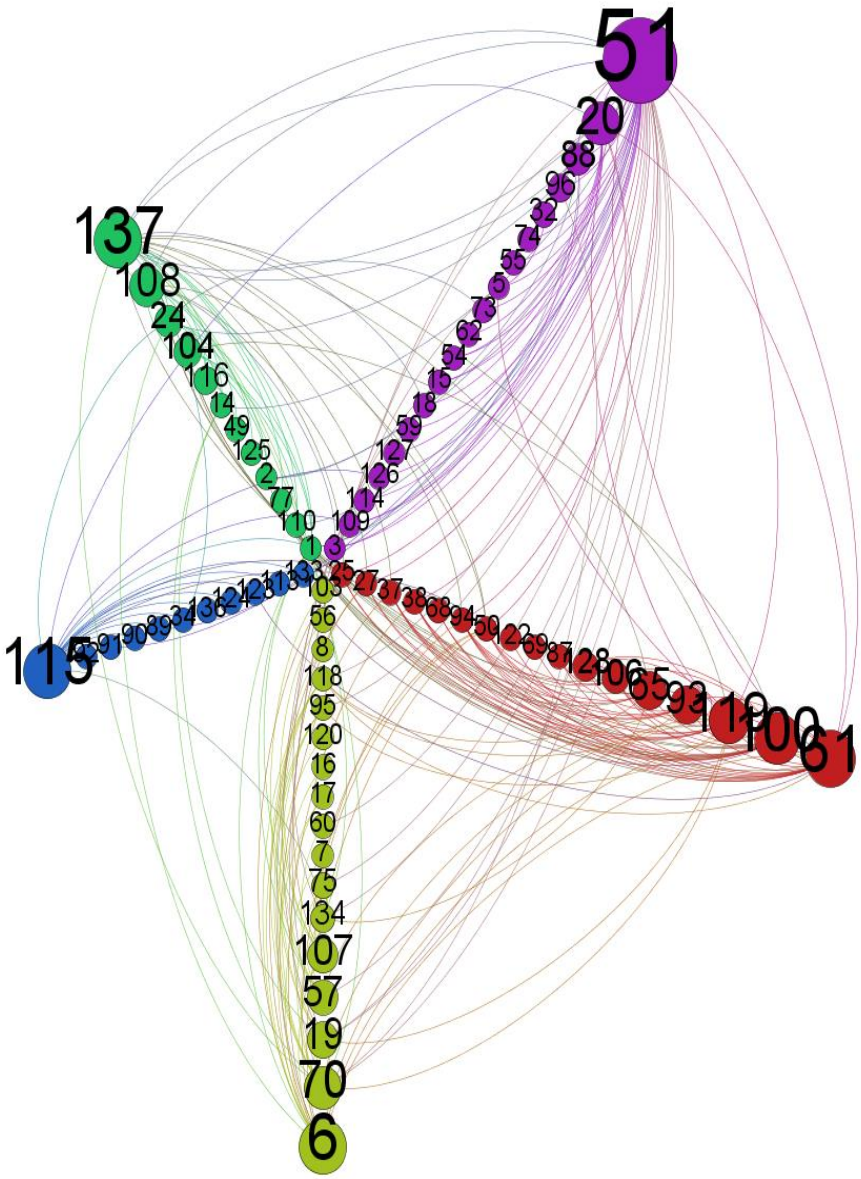
[88] Actor #80 was found to be a stand-alone community by itself. The rest of the actors in the connected network were in one community.

All actors consistently fell into one community structure in terms of information exchange except actor #80 because it had only one connection toward the main structure of the network. Removing that tie will essentially isolate this actor from the rest of others. As for the 137 other actors, the network cannot be separated into more loosely connected groupings that actors must go through certain links to get to others. In general, after the earthquake, the communication ties among actors became so dense that by removing any one connection from one actor to another would not separate them into different groupings. This was because the agency actions to engage in information exchange was so strong in intensiveness and breadth that the relationship bond was able withstand the cutoff of any one tie while maintaining closely attached in the same community structure. When a community of actors was able to be bonded through such strength of togetherness not just for the short term but also over the long term, further development of commitment in various kinds of activities were made possible, such as forging collaboration relationships.

The relatively low Q modularity levels identified across the three time periods indicated that there might be more nuanced changes in the community structures that the Girvan-Newman method had not detected. As a preliminary effort in showing what such changes might involve, I therefore adopted an alternative method (Blondel et al., 2008)

that could take a closer consideration of the communication networks at hand and was able to distinguish further communities, particularly for the emergency and recovery stages. Figures 5.1.14 to 5.1.16 graphically illustrated the detection of communities along with the depiction of actor out-degrees before and after the disaster event. Note that further communities were indeed being identified with different colors, particularly for the emergency response period (see figure 5.1.15). Comparing the community structures before and immediately after the disaster event, one can easily find that there was first of all, a drastic expansion in the number of actors inside each of the information exchange communities. The second feature was that the intensity both within and across communities clearly became denser. Such a pattern of diversification remained through the long term recovery as the density of the overall network increased over time. This can be demonstrated by the density of information exchange connections represented by the different colors of the lines connecting the actors in figure 5.1.16. These graphic demonstrations presented an alternative way in understanding the changes in community structure of the communication network. Note that during the emergency as well as the recovery stages, the network remained to be consisted of five different communities but with increasing number of actors inside each one. Furthermore, the intensity of connections among actors within each community and across communities became

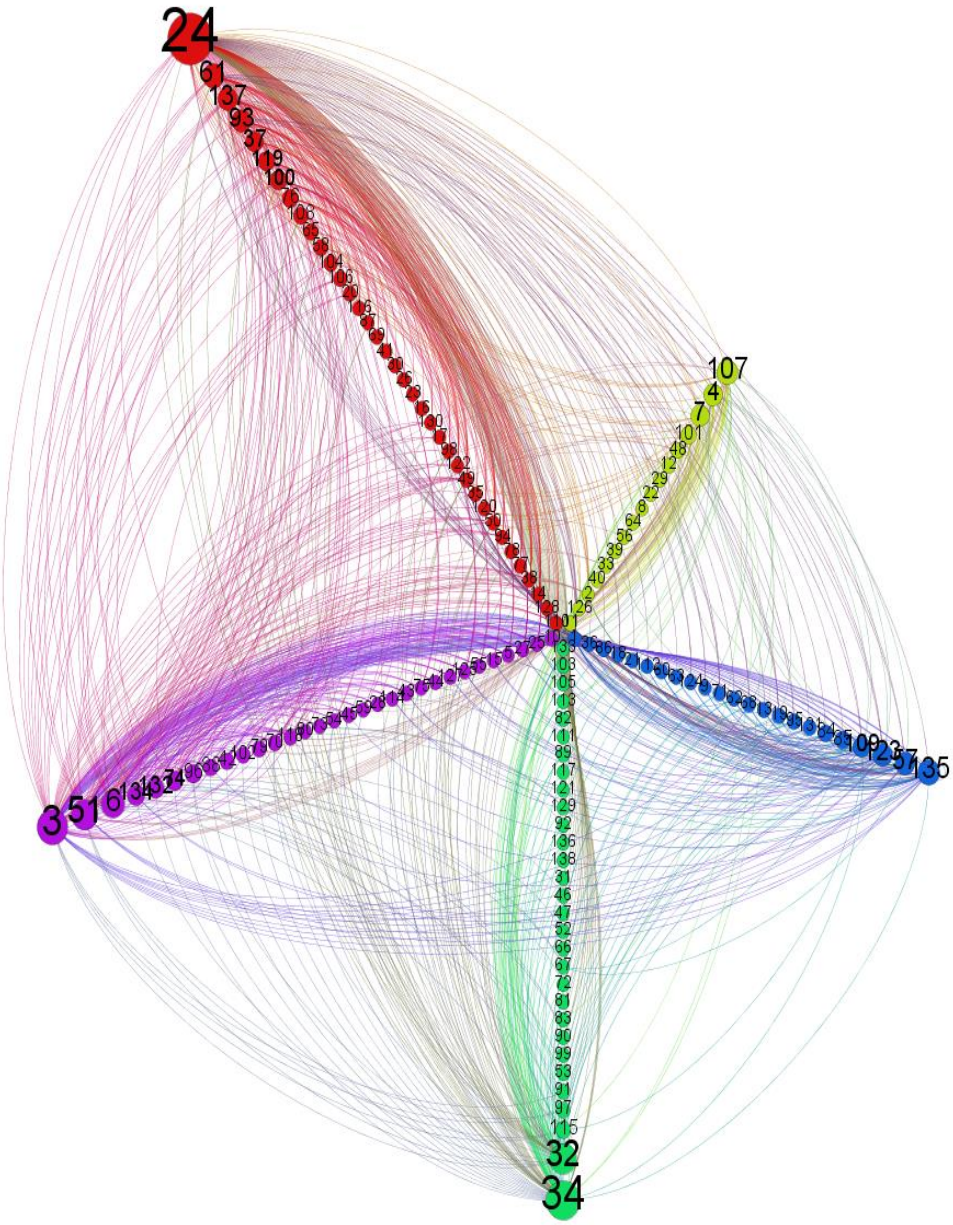
increasingly dense, thus showing the insurgence and persistency of agency action after the earthquake. Therefore, the nuances of these community structures are not to be ignored.



Size: Out-degree; Color: Communities

Figure 5.1.14. Pre-earthquake[89] Community Structure Detection-Communication Network (Detection Method by Blondel, et al., 2008)

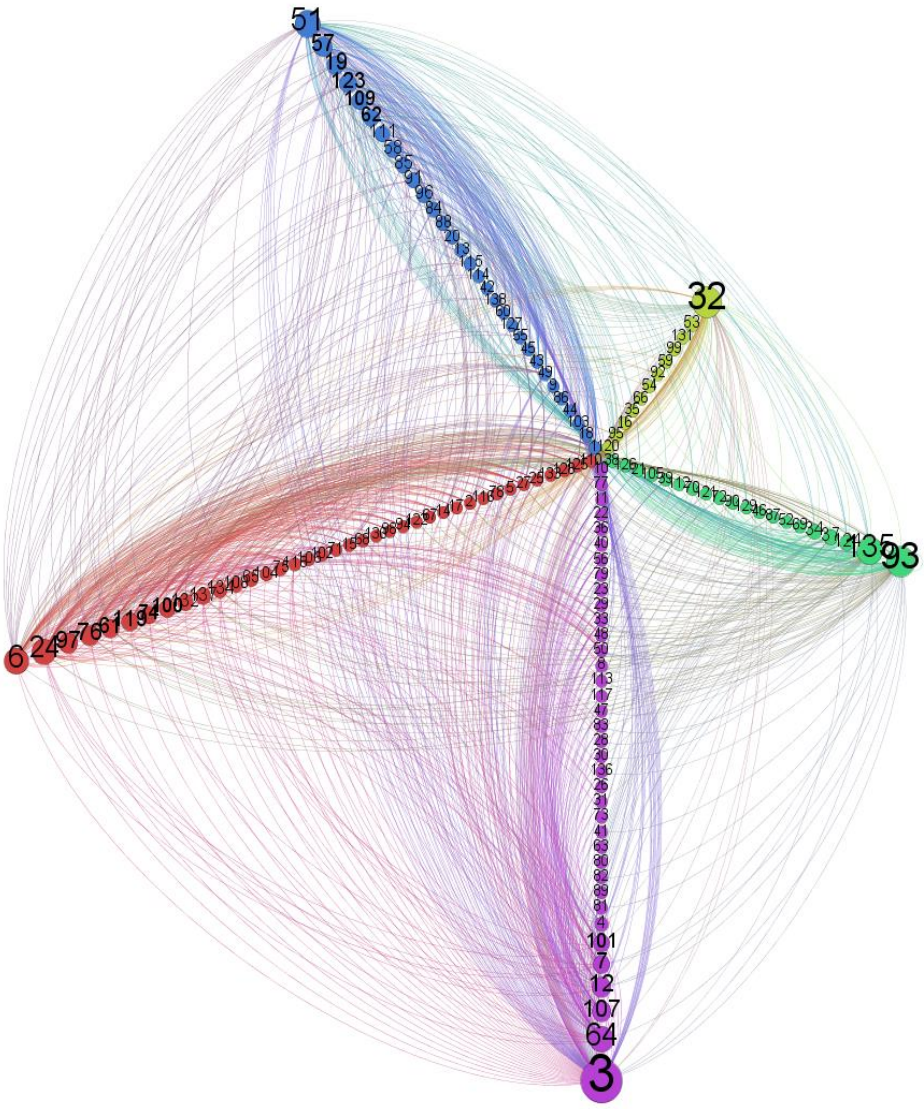
[89] Please see Figure 5.1.4*A* for the original network graph in Appendix 5.1.4.



Size: Out-degree; Color: Communities

Figure 5.1.15. Emergency Response[90] Community Structure Detection-Communication Network (Detection Method by Blondel, et al., 2008)

[90] Please see Figure 5.1.4*B* for the original network graph in Appendix 5.1.4.



Size: Out-degree; Color: Communities

Figure 5.1.16. Recovery[91] Community Structure Detection-Communication Network (Detection Method by Blondel, et al., 2008)

[91] Please see Figure 5.1.4*C* for the original network graph in Appendix 5.1.4.

Bottom-up Approach

Cliques

In the previous sections, I explored the process of agency structure formation and development inside the civil society domain from a macro perspective. Such endeavor was executed through the examination of weak components, strong components, and community detections by using the Girvan-Newman method. The development of these macro-level sub-structures provided insights in terms of understanding the general behavior of civil society actors in constructing the network as a whole at different points of time.

One needs to go a step further to discover the process of how general behavioral trends could emerge from smaller scale of relationships. Therefore, in the following sections, the discussion will be directed towards a micro perspective to look at how civil society actors organized themselves in building up network sub-structures and how these smaller groupings together construct the dynamics of structural evolutions.

There are different ways of examining the micro-level structures in network analysis. One lens I chose to examine the structure is called the "cliques". From a structural analysis point of view, a sub-set of actors can be defined as part of a clique

only when the relationships among them satisfy the following conditions: 1) every possible pair of actors is directly connected by a tie; 2) the clique is not contained in any other clique (Scott, 2001). In other words, the process in finding cliques is a way in discovering the existence of groups whose members are "maximally" connected and all of them are adjacent (directly connected) to one another. Since the networks that I am investigating took into consideration of who initiated or received a tie, the cliques found would essentially only take into consideration of the reciprocated connections. Thus, all actors in a clique were able to reach out to another through one direct step while every single one of such initiation was being reciprocated by the actor on the other end of the tie. Recall the concept of "component" that I have discussed earlier, the boundary was defined by counting all actors that were connected by direct paths or indirect ones through intermediaries. The point of emphasis for weak components was on the connectedness of the network structure. Cliques, on the other hand, focus on the completeness of a structure. I chose to put a stricter constraint in identifying the tightness of a group of actors in order to understand how denser neighborhoods in the communication structure were formed from the bottom-up over time. This kind of "tightness" incorporates a condition that not only all actors in a clique are directly

reciprocating to one another's tie initiating efforts, but also each actor is immediately connected to one another without the need of intermediaries.

Overall, I examined the existence and the actor composition of this kind of micro sub-structure for the following reasons. First, it looked further into the more densely connected areas of a component and depicted the specifics of the sources of an emerging process of cohesiveness within the central areas of a connected graph. Second, it helped in understanding how information was being exchanged or projects are being collaborated among actors with different attribute characteristics.

Pre-Earthquake Stage

During the period before the earthquake, a total of four cliques were being detected and each of them was composed of three actors. There was certain degree of overlapping among these cliques. For example, actor #51 was a member who showed up in all four cliques. Such was a signal that this actor played a "central" role in building "close" information exchange relationships and was able to gather information from actors across cliques. Each of the actors #119, #137 and #70 was a member of two different cliques. One distinguishing characteristic of the clique structure at this period of

time was that close clique relationships among civil society actors were mainly triadic and was strongly diffused by the central role of one actor. Actors also tended to share memberships across cliques.

The "hierarchical clustering of overlap matrix"[92] from UCINET output at the actor-by-actor level could be used to depict the numbers of clique memberships actors have in common. During the period before the earthquake, actor #51 and #119 were first "joined" together in being closely attached to each other because the two of them shared two clique memberships together. This joined attachment was further expanded to include actor #70 as it shared one clique with #51 and #119, and had two common memberships with actor #51. As the restraining level of the hierarchical clustering relaxes, actors #137, #20, and #61are being gradually attached to the other clique members consecutively.

I also examined the level of adjacency of each actor in the communication network to the clique members. Actor #100 was adjacent to 1/3 of the members in cliques 1 and 2. Actor #19 was adjacent to 1/3 of the members in cliques 2, 3, and 4. Actor #20 was also closely tied to the rest of the cliques. However, when looking across the entire

[92] Please see Appendix 5.1.5C2 for UCINET clique output for communication network at pre-earthquake stage.

clique participation score table as a whole, one can easily find that it was rare incidence for actors in the pre-earthquake communication network to have "close" attachment to the members inside the four cliques found. By "close", I mean the incidences when other actors have direct reciprocated connections to the clique members. In general, although several maximally complete cliques were found in the communication structure, they seemed to be distant from the actions of others in the network.

A closer look at the specific overlapping patterns among the four cliques can be examined by using the "clique-by-clique Co-membership matrix". The occurrence of overlapping memberships across maximally complete sub-structures offers insights in determining whether information can be transferred from one group to the other. An overlapping clique structure also signified actor behaviors that tended to work against information "blocks" and separation among actors. In this network specifically, each clique had certain degree of overlapping with another and the highest number of actors that two cliques can share together turned out to be two. Such a result revealed that small tightly "joined-together" groups did exist but the information being shared within one group is also able to be diffused into another group, due to the central role of actor #51.

I will now extend the discussion into a graphical context. The purpose here is to descriptively examine two main aspects of the clique members. One is the distribution of actors inside each of the cliques in relation to their attribute characteristics, such as registration status and geographical location. The other aspect is to look at the distribution of agency action in terms of actor out-degree for actors inside the different cliques found. Both of these aspects of investigation will also be displayed along with the communities detected by the Girvan-Neman method. This is to show how the macro and micro level of structuration can be integrated in light of actors' relationship-building behavior and attribute characters. Depicting the structural dynamics in terms of these perspectives is constructive step towards understanding the sources of change agent that directs the behavior of the network as a whole over time. Figures 5.1.17 depicts the graphics of pre-earthquake communication network.

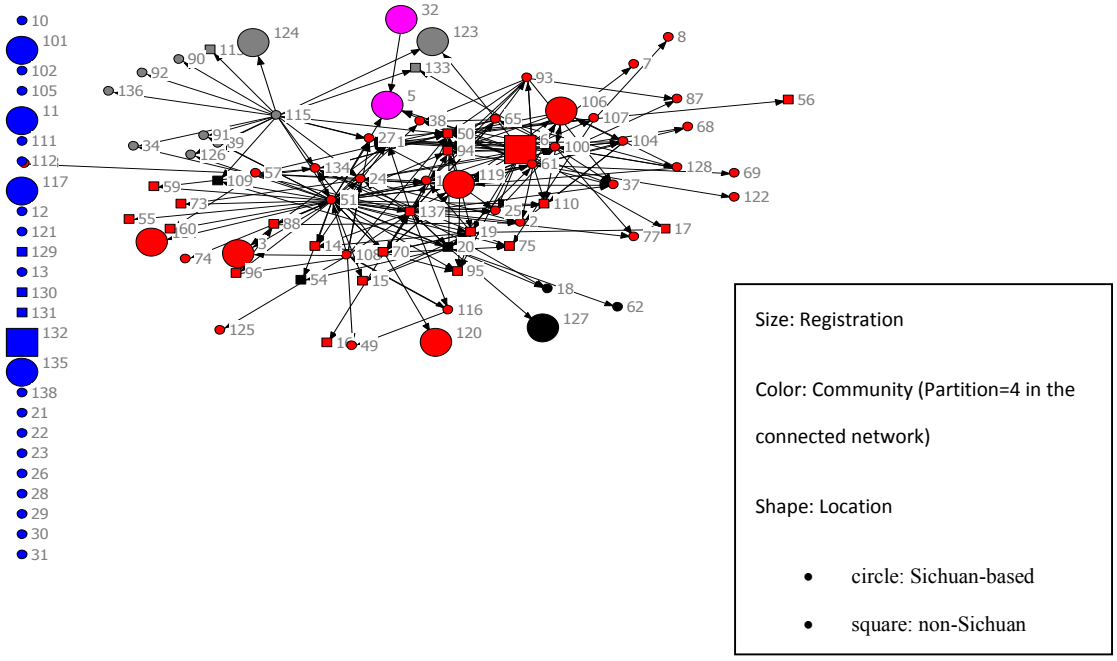


Figure 5.1.17. Combined Attributes of Communication Network (Pre-earthquake)

Recall that actors #51 and #119 were the first two being "attached together" based on the number of clique memberships they had in common. From figure 5.1.17, we can observe that both of their practices at this period time were based in Sichuan Province. Clearly, operating within the similar location provided more opportunities for the two actors to interact and communicate with one another to build stronger ties. Actor #70 and #137 further joined to be close with #51 and #119. The graphics showed that although both were registered organizations, none of them turned out to have operating headquarters in Sichuan Province. Actors #20 and #61were the last two in joining the sequence of "closeness" in terms of the number of common clique membership with

others. In this case, neither of them were members of another clique. Thinking in terms of communication and information exchange functioning, it was clear that the role of actor #51 cannot be ignored. The fact that it appeared as a member of all four cliques demonstrated that it held the power in terms of facilitating communication and transfer information among members not just within but also across clique boundaries. This actor could also be seen as a "change agent" in tiding the "threads" among actors in different cliques and thus playing a role in promoting and maintaining the cohesiveness of these core actions inside the main community of the structure. Observing the distribution of attributes across the members in the four cliques, note that #119 was the only un-registered actor. It was a Hong-Kong based nonprofit organization that had dedicated itself in community development in Sichuan before the 2008 earthquake. It also became the first civil society actor in jointly "attaching to" the key actor #51 in sharing memberships in different cliques. Thus, the role of foreign-based (but domestically registered) nonprofit organizations operating in mainland China in terms of facilitating information exchange cannot be ignored.

Figure 5.1.18 graphically illustrated the agency action in terms of out-degree alongside with community structures during the time before the earthquake.

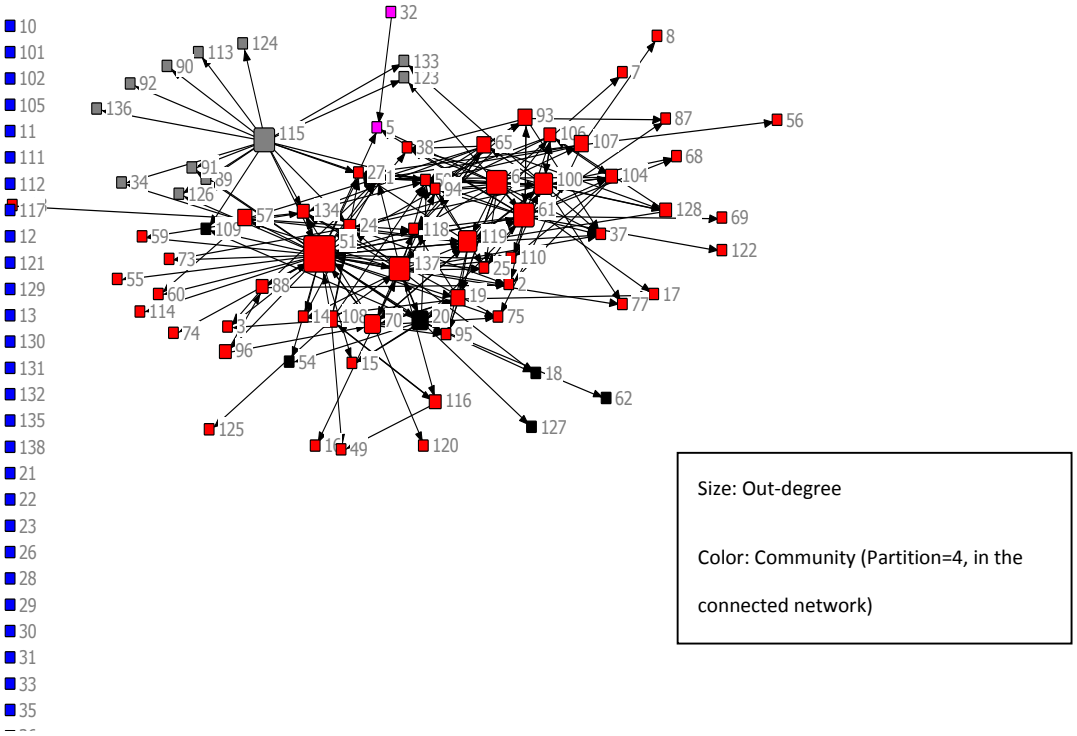


Figure 5.1.18. Pre-earthquake Communication Network (Out-degree and Communities)

The size of the nodes represented the level of out-degree of actors while the color showed the community detection from the Girvan-Neman method. Again, we can see that all clique members belonged to the largest community sub-structure except for actor #20. In fact, this actor was a grassroots nonprofit organization based in Beijing. Its communication activities were situated in the same clique with #51 and #137. While the former was a formal organization with established field office in Sichuan, the latter was one that operated in Beijing as with actor #20. The structural composition of this clique (#51, #20, and #137) had two critical implications in discovering the behavior of civil

society actors before the earthquake. The first implication was that it further demonstrated the facilitating role of #51 not only in connecting actors across institutional boundaries in terms of registration status but also across geographic locations. Since actor #20 was not sharing membership with any other clique members and was the only one from a peripheral community (colored in black in figure 5.1.18) that "made it" into one of the clique structures, the existence of #51 and #137 would act as mediators to promote the passing of information from #20 to other clique members. From this perspective, there was a sense of "dependency" of #20 on #51 and #137. However, this structural characteristic of #20 should not be confused with its role and being interpreted as its weakness for such "dependency". From the out-degree graphic display, we can see that the communication tie-building action of #20 was critical in connecting those in its own community (colored black) to the larger community (colored in red) and thus to the central actor of #51. In a sense, actor #20 can also be categorized as a "change agent" in facilitating certain information exchange ties that would otherwise not be possible among actors across community boundaries. A further observation in relating out-degree with clique members was the fact that all of clique members occupied relatively high level of communication outreach activity positions. Actor #51 has the highest out-degree measure at this period of time.

When a policy measure is aimed at spreading important pieces of information among closely related actors and thus generating further "rippling effect" of diffusion across the network, the particular structural embeddedness thus discussed for actor #51 as well as those that it shared clique membership with are critical factors to be taken into consideration.

Emergency Response

The focus of this section is on the period shortly after the disaster and the primary purpose is to observe the changes in the actors' structural behavior at the micro-level and how it relates to the macro-level sub-groupings. I first discuss the output results generated from the clique analysis. Then I will relate such findings to attribute characters and agency action from a graphical point of view.

During the emergency response period, the number of maximally complete sub-structures drastically increased from only 4 to 25. The number of actors inside each clique also increased from a maximum of three to four. This indicated that civil society actors became active not only in expanding clique boundaries but also in developing the intensity of their ties towards increasing number of others through direct and reciprocated communication relationships. Such behavior also demonstrated a tendency towards

building expansive long-term relationships at the time of crisis. On the other hand, the increasing number of cliques also indicated a type of behavior that favored communication activity and diversification of ties across the entire network. Compared to the clique structure during the period before the earthquake, the short term response stage is characterized by the tendency that close ties were no longer being built around a limited number of groupings. Civil society actors activated their communication capabilities across various kinds of close relationships. In other words, the agency sources of passing over and receiving information were no longer being dependent on the action of only a few closely connected actors. Different channels of information exchange were being unleashed. Such awareness of active participation in building available opportunities on the actors' part can be argued to be the primary structural foundation showing the coping behavior of Chinese civil society in times of extreme uncertainty and stress.

The "hierarchical clustering of overlap matrix"[93] at the actor level provided insights in terms of the "joining sequence" of how actors were being closely attached to one another through sharing clique memberships. It is apparent from the results that actors #3 and #51 shared the most number of cliques together. This meant that they

[93] Please see Appendix 5.1.5D2 for UCINET clique output for communication network at emergency response stage.

played key role in facilitating communication and information flow across the clique boundaries. At the next "joining" level, actors #24 and #119 became further attached to #3 and #51. Among these four actors, note that #51 and #119 were also the first two actors to share the most number of clique memberships together during the pre-earthquake stage. After the disaster, they were able to sustain their role in tying up the linkage across different cliques. Also note that actor #3 formally came into existence as a social group after the earthquake. Together with actor #24, both originated and operated as grassroots civil society actors with a geographic focus in Sichuan Province. This signified that "locally-grown" groups and nonprofits started to emerge in playing an important part in communication relationship-building and prevention of grouping segregation among closely knit-together sub-structures.

Examining the results showing the overlapping clustering level, I found that this was the stage where actors showed certain "distances" in their behavior for clique membership sharing. The first set of split behavior among the three sets of actors: 1) #109 and #115; 2) #119, #24, #3, #51; 3) #123 and #57. As the stringency level of clustering was being relaxed, the twenty five clique members eventually joined together as a whole. In terms of information sharing, this type of clique formation showed some primary diversification in clique membership choices and could be categorized as one sub-

grouping trait for civil society action behavior shortly after the earthquake. However, the story had another side to it. This kind of choice-expansion activity was also accompanied by a "disruption" in the continuity of "joining sequence" when one closely observing the cluster overlapping structure shown in Appendix 5.1.5D2. As the constraint level of clustering overlapping started to relax, we can see that the clique co-membership participation behavior initially separated the actors into three types of "closeness". And as actor #100, #37 and #7 gradually joined with the main common membership group, there was still a divide between two groups of actors whose information sharing activities were basically not reachable to each other. It was not until the attachment of actor #76 to the clique composed of #137 and #24 that the information pathway across the divide was being bridged. In other words, pieces of information might not be as easily passed through across cliques as the case when the "joining sequence" was more integrated smoothly as a whole when before the earthquake.

Moving on to the next level of analysis illustrated in the "clique-by-clique actor co-membership matrix". This matrix depicted the number of members in common between a pair of cliques. Compared to the period before the earthquake, the matrix[94] for

[94] Please see Appendix 5.1.5C3 for the pre-earthquake matrix and Appendix 5.1.5D3 for the emergency response matrix.

the emergency response stage not only turned out to be larger in size but also in terms of the way that actors shared their membership among cliques. Note that there appeared to be a large number of zeros between pairs of cliques and this meant that there were incidences when cliques did not share any members together. However, for members from clique 1 to clique 14, all pairs of cliques were connected to each other through sharing at least one actor's participation. For the rest of the 11 cliques, information could at least be transferred from a selected number of others, thus leaving none of the cliques completely isolated. What could be generalized here is that although there were "disruptions" in information sharing among particular pairs of cliques, communication contacts from one clique member to another can be reached throughout the 25 cliques, either directly or indirectly. This means that on the one hand, actors at this period of time tended to pick and choose others to develop closer communication ties. On the other hand, the line of information sharing was not completely broken throughout all the cliques. No one clique became isolate as a result of such sub-structure formation.

Let's now graphically examine some of the characteristics of the distribution of actor attributes and out-degree activities among some of the key clique members. From the hierarchical clustering analysis at the actor level discussed earlier, I found that actors #119, #24, #3 and #51 were among the first four in the attachment sequence to share the

most number of cliques together. Therefore, in the examination here, I will mainly focus on how their micro-structuration behavior descriptively related to actor attributes and agency action represented by out-degree measures. Figure 5.1.19 depicts the actors' registration status and location within the short term response communication network structure.

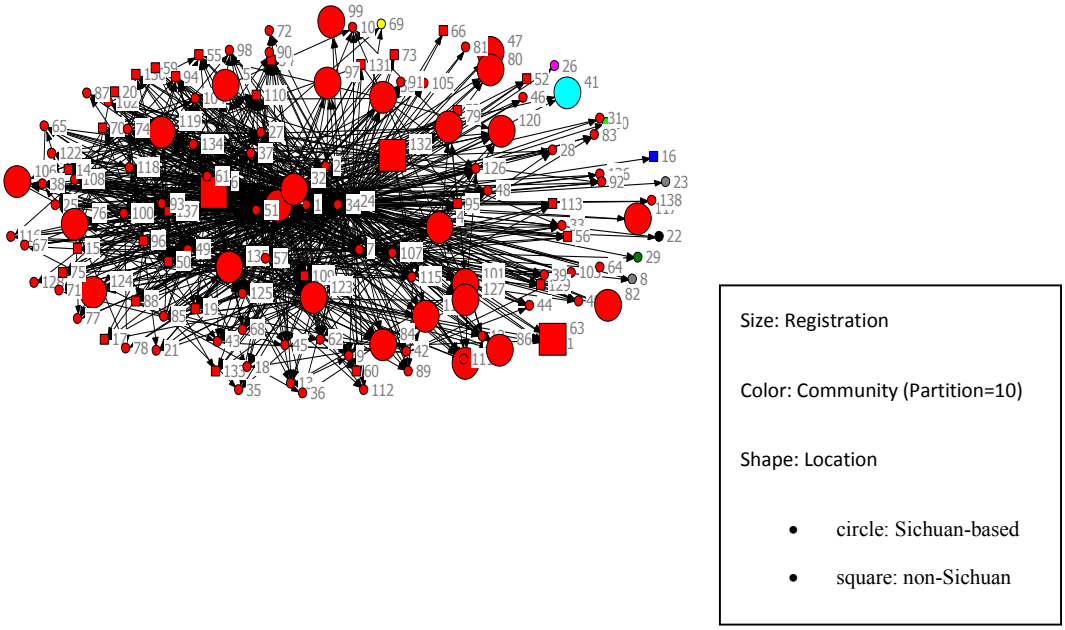


Figure 5.1.19. Emergency Response Communication Network (Combined Actor Attributes of Registration, Community, and Geographic Location)

The nodes colored in red were all detected to belong to the same community. As we can see, the majority of the actors became part of this larger community, with the exception of a few "hangers" located on the outer periphery of the structure. First of all, from the

shape of the nodes illustrated in the graph, all four actors (#119, #24, #51, and #3) had field offices established and operated within the earthquake impacted area in Sichuan Province. This indicates that shortly after the earthquake, some of the most important key players in facilitating information flow among tightly connected sub-structures were either "locally-grown" or had been practicing in the region for a long period of time and developed culturally-rooted ties with local communities. Secondly, the size of the nodes tells us that #119 and #3 were non-registered actors (larger in size). What is encouraging regarding the emergence aspect of civil society agency structure lies in the existence of actor #3. As a newly formed social group immediately following the disaster, the actor quickly became a critical member across multiple numbers of cliques in terms of developing direct and reciprocated communication relationships with others in the network. Its non-registered status did not seem to prevent it's proactivity in reaching out towards others. At the same time, the institutional status difference was not perceived as a barrier for others in the network to build strong clique connections with the actor #3.

In fact, the sharing of membership activity was consistent with the execution of agency freedom in terms of out-degree activity. From figure 5.1.20, we can see that those who first joined together to be close in terms of sharing clique memberships together were also the ones with higher level of out-degree measures.

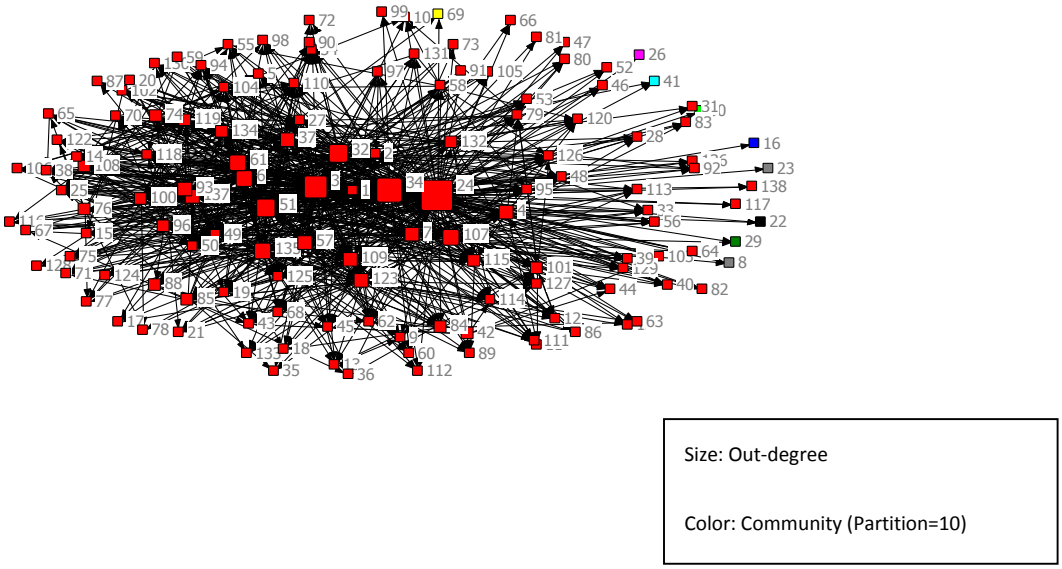


Figure 5.1.20. Emergency Response Communication Network (Out-degree and Communities)

Two implications can be drawn from this finding. One is that shortly after the disaster event, those actors who were engaged in close communication connections with others through clique participation did value their agency freedom by actively initiating ties with others both within and across clique boundaries. Secondly, such active behavior was also being reciprocated or being "treasured" by others, and the result was a drastic expansion of maximally complete sub-groups within which civil society actors could share information directly with one another. These two action processes built up the foundation for the rise of the key actors in maintaining the dynamics of cross-clique communication and information sharing.

Long-term Recovery

So far, I have shown that there was a dramatic change in terms of the number of cliques when comparing the pre-earthquake stage and the emergency response stage. One of the key conclusions being drawn from earlier discussions was the tendency for actors to diversify choices in developing close communication relationships and at the same time reaching out across the entire network rather than focusing on their immediate neighborhoods. In order to determine if there were any signs of institutionalized structural changes based on such dynamics revealed from a short term response, I further examine what happened over time during the long term recovery stage.

From the output results, the number of cliques increased from 25 in the previous stage to 47 during the recovery stage. First of all, with the exception of the first clique, the number of actors inside each of the cliques remained consistently around three to four. The largest clique being found was composed of five members. Compared to the maximum member composition from the emergency response period, there was a small scale of expansion within cliques. Secondly, the sheer increase in the number of cliques in general indicated that civil society actors kept becoming intensely engaged in "close" communication tie-building with others across the network. This shows that not only the

activity level of information exchange has not been winding downwards over time, but the amount of agency "energy" in making close connections was also sustaining. This can be indicated as a sign of tendency or willingness to institutionalize relationships being built and role maintenance as perceived by the civil society actors themselves.

In order to depict the key actors through an attachment sequence determined by the number of cliques members shared together, I look at the "hierarchical clustering of overlap matrix[95]" at the actor level. Note that actor #3 and #24 became "closest" in terms of sharing membership in 8 cliques altogether. Actor #51 and #61 further joined the sequence in being close as the clustering level is relaxed at the next two levels. As the clustering level being further relaxed to less stringent levels, more separate cliques can be found. For example, at the clustering level of 1.000, four groups of actors tended to be loosely connected to one another but at the same time, closely joined together in terms of the number of clique memberships they share. Compared to the emergency response stage, at this same level of clustering constraint, I found that there were three such groups in the joining sequence. This indicated that when given a particular level of overlapping clustering, there were slightly less incidences of common membership sharing across actors during the long term recovery stage. Actors at this point of time behaved in a way

[95] Please see Appendix 5.1.5E2 for UCINET output.

that exemplified a sense of "boundary-protection" when it came to communicating across cliques. This can be further demonstrated by the results shown in the "clique-by-clique actor co-membership matrix". Examining the general distribution of degree of overlapping between pairs of cliques, there is a clear pattern showing differing levels of disconnectedness among different cliques. The group with the most connectedness contained those from clique #1 to clique #8, all of which share at least two actors together. This means that information being distributed throughout these cliques would have a higher chance of reaching across with more efficiency. Actor participation among these cliques focused comparatively more on both diversification and boundary expansion. These efforts tended to work against the tendencies to divide and factionalize the network. At the next co-membership sharing level, the group contained those from clique #9 to clique #34. Most of the pairs of cliques in this group shared at least one actor together, but not as many as those in the first group. Information transferring pathways across cliques were still open but there were less alternative actors to turn to if one failed to share a piece of information with members at another clique. Therefore, compared to the "closeness" of cliques in the first group, members the second group tended to have more distant and estranged relationships among each other. The third group contained those from clique #36 to clique 47. The most distinguishing feature of the connections

among these cliques was that a significant number of cliques were without any common memberships. This indicated that information sharing across members of these cliques would encounter barriers. This is because while members within cliques were closely connected to each other, no ties were being built across cliques. Information could be circling inside one clique but less likely to be transferred over to another clique domain. The level of separateness for this third group of cliques was even higher than the previous two groups.

However, regardless of the emergence of certain degree of "estrangement" during this period of time, the connections among all the 47 cliques remained open. No isolated cliques were being found across the co-membership matrix. Therefore, information exchange and communication in general was still possible across cliques, but with the need of intermediary cliques, thus not as easily accomplished as the cases in the earlier two periods.

Moving on to relate the clique formation behavior with actor attributes and out-degree activities, similar patterns can be discovered when comparing to the emergency response period. Take some of the key actors in facilitating communication across cliques for example, such as actor #3, #24, #51, and #61, all of them turned out to have

established locally-rooted offices and field practices. In terms of registration status, actor #3 was the only non-registered one. Actor #61 originally came into China as a foreign-based nonprofit organization but gained registration status only after the 2008 Wenchuan earthquake. Over the years leading up until the 2008 earthquake, the actor developed culturally rooted practices in the area of poverty alleviation within the local communities in Sichuan Province. The organization further expanded its area of practices to disaster response and long term recovery in the form of assisting community development for the rural villages that were significantly impacted by the earthquake event[96].

Figure 5.1.21 shows the out-degree activities of civil society actors during the long term recovery stage, the four key actors in information exchange across cliques (#3, #24, #51, and #61) also maintained high levels of agency actions in initiating communication relationships. One can see that actor #3 had the highest number of out-degree among those identified inside the large community (colored in red). It was further followed by actor #51, #24, and #61 consecutively in terms of the level of agency action.

[96] Chen, Taiyong. "The Actions and Models of '#61' during the Wenchuan earthquake response and recovery". (This internal document was provided to me by the informant of actor #61 upon my visit to the organization's field office in Chengdu, Sichuan Province.

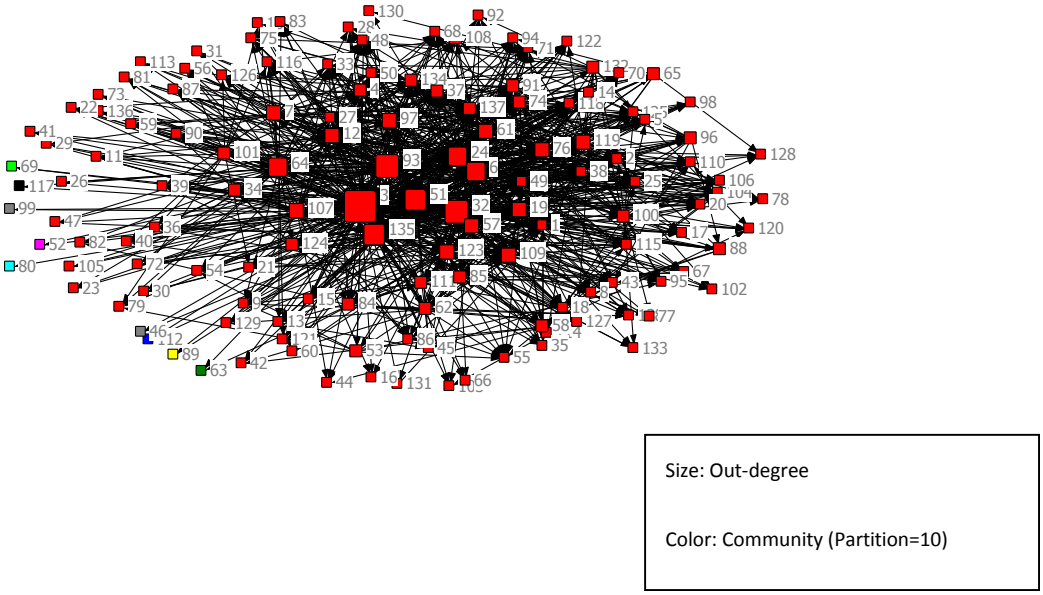


Figure 5.1.21. Long-term Recovery Communication Network (Out-degree and Communities)

Therefore, the findings in this section can be summarized as follows, with regard to the bottom-up structural formation in the communication network. First, there was a tendency towards high level of micro-structure expansion. The first stage was illustrated by a tendency for diversification and boundary extension in forming different cliques for information exchange. The second stage was characterized by continued expansion of closely tied communication relationships and a development of certain degree of stratification across the micro-structures. Information could be easily transferred throughout certain set of cliques than others. Participation and involvement in the local communities was a valuable asset for key actors who played facilitating role in bridging

the boundaries across cliques. This can be demonstrated by observing figure 5.1.22 shown below. Note that all of the four actors who shared the most number of cliques during the recovery stage (#3, #24, #51, and #61) were all found in one community with the same circle shape which represented those who conducted activities inside the Sichuan Province.

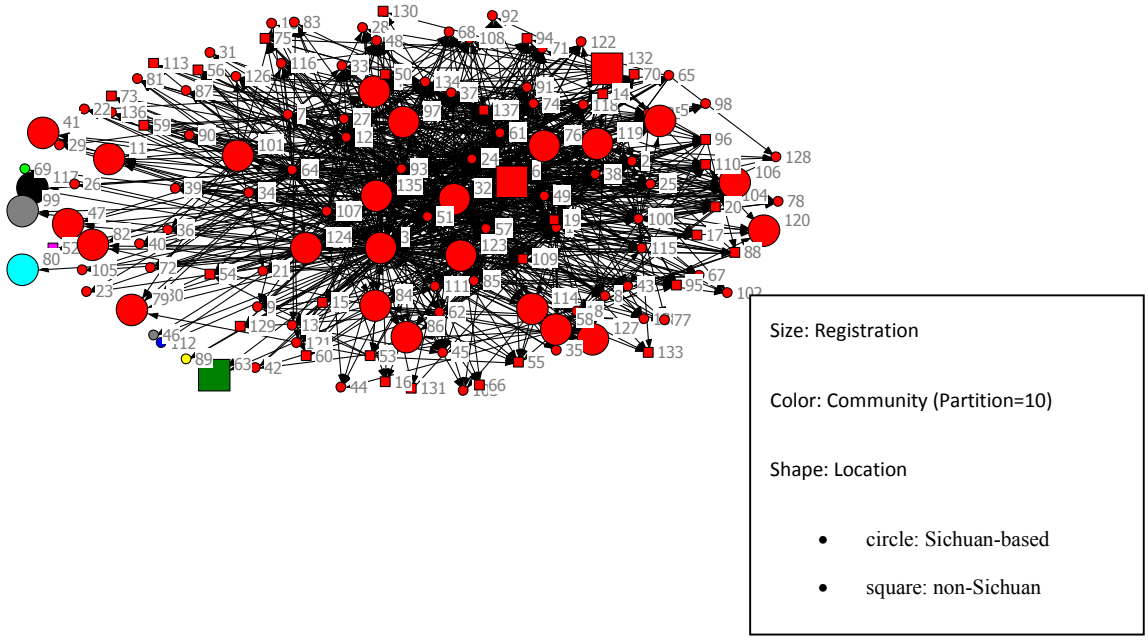


Figure 5.1.22. Long-term Recovery Communication Network (Combined Actor Attributes of Registration, Community, and Geographic Location)

Secondly, outreach communication tie-building behavior was being sustained among key actors who became highly active in being mediums for cross-clique information exchange. Two unique cases were worth looking into when observing the clique formation results across the three time periods. One is the emergence of actor #4

started sharing clique membership with two other newly emerged civil society actors, including actor #123. While actor #123 remained to have tight communication connections with others during the recovery stage, the involvement of actor #4 in cliques was only short-lived during the emergency response period after the earthquake. Another unique case was the emergence of actor #97 in participating in two cliques during the recovery period, which involved actors #3 and #51. The actor was not sharing membership in any of the cliques found for the emergency response stage. It is therefore important to investigate the driving factors for the actions of #97 in terms of forming close communication ties within the domain of civil society.

The Case of Actor #97

When it comes to within-sector institutional development, the original emergence of the actor #97 could be separated from its connection with actor #51, a formal domestic NGO specializing in supporting and funding projects for the development of newly formed civil society groups/organizations. The particular type of interaction between the two actors was one that can more precisely characterized as project support through "collaboration". The initial connection was made by actor #97 applying as one of the

"incubation organizations" that would be eligible for a one-year funding from actor #51 to execute its pre-designed project at the local community level. As was recalled by the organizer of #97, this opportunity also came along with the intention of actor #51 to develop Sichuan-based nonprofit groups/organizations after the 2008 earthquake event. This way, the collaborative relationship between the two actors was motivated by mutual interests in the long term recovery at the local scale. In addition to this type of project-supporting collaboration relationship, another type of interaction between actor #97 and other civil society actors involved assisting others in their health-related projects at the community level. One example provided by the organizer was its assistance in building self-help strategies within community networks for elders suffering from diabetes[97].

Regarding the aspect of long term growth for the actor #97 as a whole, its interactions with actor #3, particularly in the form of participating in the latter's training platforms built during the long term recovery stage played a key role. This role contains two aspects. On the one hand, the training platform provided by actor #3 facilitated further communications and exchanges of information between #97 and other civil society actors. On the other hand, the training programs themselves were also perceived

[97] For detailed account, refer to Appendix 5-1-CaseSG97-4 and interview account in SG97-01-07 in Appendix 5-1-5-13.

as an educational tool for participants to further understand the "idea of civil society" and related concepts, such as "citizenship".

> But the positioning of (actor SG3) is different, maybe in terms of a different functioning field and group of people, and what they are doing is related to trainings on the topics of civil society and civic awareness. I also participated in a few of their trainings and I felt that they have a particular focus on the concept of citizens. But they won't emphasize too much on it because there is this practical side that we all have to face in the field. So they will also provide us with some case studies or focus group discussions. They are still trying to find a good way to do this as well. (SG97-01-08[98])

This reflected one particular characteristic of the actions taken by actor #3 when it came to long term recovery stage. And this was the transitioning towards training platforms not only for the purposes of mediating "bonding relationships" among civil society actors, but most importantly, for building up a common conceptual foundation specifically understood as Chinese "civil society" within which groups/NGOs field practices were based upon. This way, the emergence process of civil society in the post-crisis context maintained its "momentum" in both the specific devotions of each group/organization actor over time and in being reinforced through the functioning of actor #3 providing a "nurturing environment" for the sustainability of civil society actors at the level of practice and awareness.

[98] For original Chinese script please refer to Appendix 5.1.5.14

LU: So what impressions would you have for the information platform initiated by Actor #3, or what kind of platforms would you hope to see?

SG97-01: It depends on how they position themselves. I also talked to (NGO3-03) about this and their current positioning might be restricted by the program itself. They might not have a particular focus, and the topics are all scattered around. But their goal is to construct a communication platform. That's why the way they arrange certain topics is less systematic. But when we participated in the training provided by (actor #134) on topics related to action research, that one is relatively systematic. (SG97-01-09[99])

Interactions between Domestic and International NGOs

Another trait worth noticing regarding the interactions of actors within the civil society domain was reflected through the organizer's (NGO97-01) account of the activities and interactions between domestic and foreign NGOs after the earthquake event. One of the most recognizable differences between the actions of the two types of civil society actors can be traced back to their diverging ways of operation and focus of practice. The organizer openly admitted that most of the interactions the actor made inside the civil society "circle" were with other domestic NGOs, rather than with foreign ones. It was mainly due to the latter's unique "operating strategies and management" apart from the functioning of their domestic counterparts. However, when a foreign NGO became formally registered inside China established its field offices, such as the case of

[99] For original Chinese script please refer to Appendix 5.1.5.15.

actor #61, the operation procedures would be "different" in terms of being adjusted to be more customized towards the local cultural and social conditions.

Another difference between the functioning of domestic and foreign NGOs is revealed through the motivations for sustainability over time.

> There were many foreign NGOs who mainly focused on response assistances or aid, and those were inherently short-term. They will leave as long as their job was done because that was how they positioned themselves in doing. For our domestic NGOs, especially those working in Sichuan Province, are all localized and long term. Therefore, they are different. Many of us are in the transitioning period now, basically heading towards focusing on local development. The local NGOs care more about local people, so they must be transitioning towards works related to long term development. The earthquake itself was just an emergency event, and because of this, many of the foreign NGOs were drawn here. Whether or not they are domestic or foreign NGOs, they all had to leave eventually. It's been a long time since the event first happened, the main focus is different from back then. You can see that there are fewer NGOs remaining now, which is necessary, because the response period is over. There was no need for them to stay. So the ones who chose to stay were mainly those devoted to long term development at the local level. They were either Sichuan local NGOs or domestic ones, either way, their point of emphasis must be related to long term human and social development in the area, rather than on emergency assistances. (SG97-01-10[100])

Thus, the source lies in the functioning orientations after the disaster event. Foreign NGOs are perceived to perform emergency response and short term-oriented disaster relief tasks to alleviate the immediate impacts of the earthquake. Domestic NGOs, especially those established in Sichuan Province after the event, were more grass-roots in

[100] For original Chinese script please refer to Appendix 5.1.5.16.

nature and also aimed at long term involvement in the area. Again, the source for those domestic civil society actors to remain beyond short term relief period and maintaining recovery actions arose from their motivations in transforming into development-oriented organizations while devoting their focus on the social and human aspect of the recovery. Therefore, the fundamental positioning of how foreign and domestic actors saw their roles through the short term into the long term periods was perceived to be a contributing factor in their divergence in action. This also provided a primary explanation for the active participation of actor #97 in different clique structures over the long-term recovery stage. The increasing awareness of the inter-dependency among the civil society actors toward capacity development of grassroots actors also contributed to its sharing of membership with actors such as #3 and #51 during the long term recovery stage.

Communication Platform Building (SG97)

One factor that needs to be noticed by the illustration of the emergence stories of different civil society actors is the insurgence of the function of communication platform building through disaster response and recovery. Such a functioning in the midst of great uncertainty and stressful conditions could perform as a shield from a tendency for the

society to lose its strength to "stand-up" against the troubles brought about by great disasters. This is because the platform often provides a level ground for relationships among actors to emerge, develop, flourish, and sustain over time. I now use the example of actor NGOLF to qualitatively illustrate how this point can be applied to understand the origin of clique expansion in the communication network.

The Case of Actor NGOLF

The long term recovery activities chosen by the actor NGOLF in general, from an outset, resembled those performed by actor #3, such as the envisioned role of functioning as a communication platform, provisioning of training programs and resources for communication. When it came to the actual practices of field activities, differences did emerge in terms of ways that each actor positioning itself in the civil society field. First of all, actor NGOLF focused its attention specifically in "Youth and family education". And over time, the actor had already accumulated some skilled "teachers and volunteers" who could manage the educational training programs. For example, in one of the collaborative projects implemented with another local NGO, some of the teachers for their youth-related classes were volunteers from NGOLF. Or sometimes the actor would

also provide training for teachers from the former. At the same time, its partner's role was to administer and manage the overall functioning of the program.

Thus, in terms of field of specialization, actions of NGOLF were oriented towards servicing a particular sub-group of the local population and the nature of its activities were more concentrated in one area of disaster recovery. The area of focus defined by actor #3 (SG3), on the contrary, was relatively broad in terms of its service targets. Recall that one of the primary goals defined by actor SG3 at the beginning stage of its formation was to service all nonprofit groups and organizations that came to Sichuan performing disaster recovery related activities. In this regard, the elaborated account by the participant of NGOLF illustrated the specifics of its action concentration:

> We have one key point of focus regarding the groups of people we intend to serve, and our direct service targets are youth and adolescent. But the group of people that we encountered the most was those volunteers and teachers, more in touch with teaching resources, including in the disaster areas. What we have done the most was in making contacts with their schools or their educational unit inside the government, making connections for them. And of course there will be times that we have to get in touch with local civil society groups that are conducting such kind of services, as well as schools in the area. This is because our focus of service is on youth. Although we ourselves would organize some activities for this group of population, we feel more towards playing the role of 'propeller' (in encouraging all these other entities to engage in communication and collaboration). After all, we don't have too much resources to do too many things at the same time. But what we can do…we can create a platform by making

> connections with many different systems, to facilitate communication among them. (NGOLF-01-04[101])

This account depicted clearly of what consisted the actor's functioning of "communication platform" as compared to that performed by SG3. Two points are worth elaborating here. First, the communication platform formed by NGOLF was primarily centered on the issue of youth education. Thus, the actor facilitated the communication not just among civil society actors, but also across schools, other local social service entities, as well as those in the government, such as branches in the educational system. The functional purpose of building such a platform originated from a specific focus on youth development. For actor SG3 on the other hand, its platform was less issue-oriented and was not built on targeting a particular sub-group of people in the society. Rather, the function of actor SG3, as described by the participant of NGOLF, incorporated a broader and characteristically different population as its servicing targets. Its goal was primarily in facilitating the communication ties among civil society actors in general. Figure 5.1.23 below provides a graphical illustration of the role performed by the two actors in relation to their position with all other civil society actors in the field.

[101] For original Chinese script please refer to Appendix 5.1.5.17.

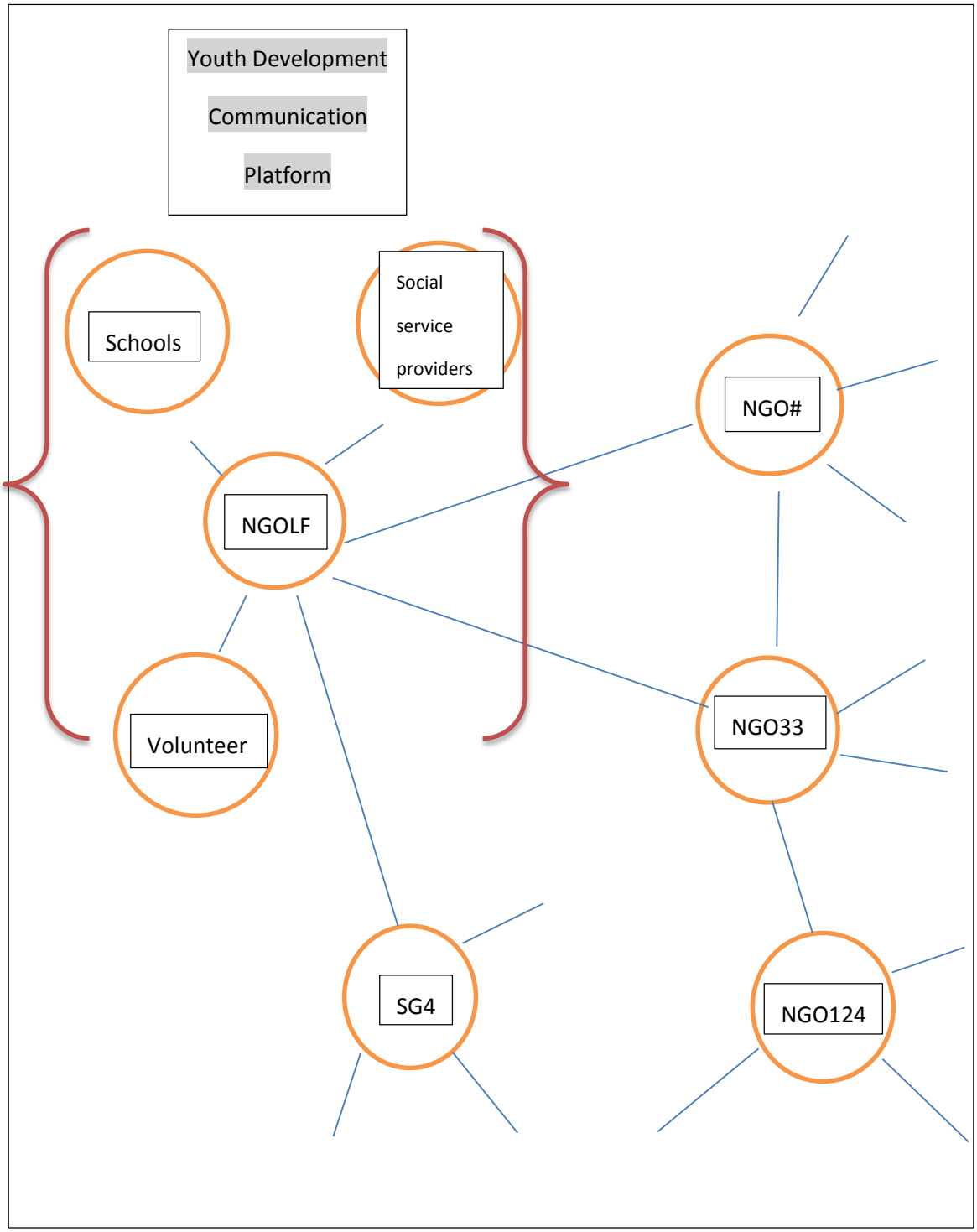


Figure 5.1.23. Types of Communication Platforms (Long-term Recovery)

Understood from the perspective of the participant NGOLF-01, his way of defining the function and role of itself was one characterized by promoting and supporting the communication connections among the different parties involved in youth development and education. While its own emergence was supported by its communication and collaboration relationships with schools, volunteers, and other social service providers at the local level, its action to expand the platform participation started with its connection toward other civil society actors that functioned in the same area of practice, such as its communication ties with actors NGO33 and SG4. In other words, its actions entailed a background motivation of raising the social awareness of the issue at hand and performing as a "mediator" among the different social and state actors to enable them to recognize their role in making a contribution to the capacity development of civil society actors. To some extent, another way to look at the action of NGOLF is its function in enhancing one form of social capability, which particularly entailed youth development during the disaster recovery stage.

As a general reflection on the development of Chinese civil society after the earthquake event, the participant held a firm view that the disaster performed as a catalyst particularly for the NGO development in the country. Before the earthquake, "none of us had heard of the term 'NGOs'…and it would be unimaginable if we were to go into the

rural communities to help them with something by introducing ourselves with this title and identity". After the earthquake, however, things changed drastically, especially in terms of the level of general acceptance of the name of "NGOs" and the functions being performed by them. "No matter how remote a place is", as was recalled by the participant, "when we say we are volunteers coming here to provide (certain kind of) services, it is started to become relatively easy for the local people to accept us now as they have at least heard of who we are and what we do". Therefore, the disaster event could be thought of as an impetus for not only the growth of civil society groups/organizations, it also performed as an accelerator in promoting the social awareness of what civil society actors are and what they do in relation to the ordinary lives of the general public[102]. Such impetus was demonstrated by the increasing amount of civil society actors engaged in building close information exchange ties with each other through the formation of cliques. The sustenance of these close relationships came from a spirit of dedication in each of the actor's chosen areas of practice as well as the persistence in their agency action to keep reaching out toward others.

[102] Detailed account refer to Appendix 5.1.CaseNGOLF.2

Chapter 5

(Part II)

Collaboration and Sustainability of Agency Structures

Formation of the Sustenance Structure

In this second part of this chapter, I examine the collaboration network environment, paying special attention to investigating it alongside with its communication counterpart. This is because the project collaboration behavior represented a level of agency action that works together with communication behavior helping to enhance the strength of civil society to explore its capability with dedication of efforts and time. In the context of encountering extreme distressed situations such as the 2008 Wenchuan earthquake, I have shown that it was the agency freedom to initiate communication that built up the foundational structure of connection. It is therefore necessary to find out if there was any sustenance for such agency structures, thus setting up the conditions for the institutionalization process. In this study, I investigate the collaboration efforts that led to building up of the sustenance structure.

Reciprocity

Comparing the reciprocity measures for communication and collaboration networks (Table 5.2.1), we can see that of all the pairs of actors that had connections, the percentages of the pairs had reciprocated connections across the three periods of time were generally less for collaboration ties than that of communication ties.

Table 5.2.1. Comparison of Reciprocity Measures before and after the Wenchuan Earthquake (Communication and Collaboration)

Time Period	Communication Reciprocity	Collaboration Reciprocity
t1 (Pre-earthquake)	0.0900	0.0556
t2 (Emergency Response)	0.0925	0.0856
t3 (Recovery)	0.1067	0.0989

Before the earthquake, the percentage of reciprocated project collaboration ties were about 4% less than that of the communication reciprocation. Shortly after the disaster, while the reciprocity for communication network experienced 0.25% increase, the reciprocity for collaboration networks experienced 3% increase from 5.56% to 8.56%. Although the measures in themselves are still lower in quantity than that of those for the communication ties, the higher amount of increase again indicates the high level of motivation and commitment of civil society actors to make contributions to assisting the response process. This is because the activity of project collaboration inherently suggests

a higher level of dedication on resources, time, and possibly intended field-expertise development on the participating actors' part (Gazley 2008).

This kind of increase in reciprocated collaboration connections in such a short period of time after the earthquake primarily signified two factors regarding the nature of civil society as a whole in the Chinese context. One is the agency nature on the part of civil society actors not only to establish themselves as informal self-organized groups or formal organizations, communicating with each other through times of crisis but also their capability in building collaborative connections. I argue that this characteristic is unique to the Chinese case. In circumstances with social structures that were more vulnerable when reciprocity was rare and actors were "sparsely" connected such as the network structures before the 2008 Wenchuan earthquake, the standard expectation is the structure as a whole would be less likely to withstand an outside "shock" such as a disaster event. On the contrary, this not only did not happen in the Chinese case but most importantly, the event explicitly brought forth a sense of self-awareness of the agency role on the civil society actors' side. The enactment of such agency further established a foundation for "resilient" structures characterized by increasing percentage of reciprocation in collaboration ties that were more likely to be enduring over time.

A second nature of the Chinese civil society can also be revealed. It is the actors' growth-oriented focus even during the short term response period. Immediately after a disaster, attentions are normally diverted to emergency assistance duties and the long term life-span of the actions and interactions among group/organization actors are rarely being investigated in an in-depth manner. In the Chinese case, the persistence of reciprocal communication and collaboration behavior presented some of the primary evidences showing the existence of an increasing willingness for Chinese civil society actors to engage each other with a long-term perspective. There was a sense of persistence through the actions of these actors. Clearly, this commitment has been carried on to long term recovery stage where the reciprocity measure increased to 9.89%.

So far, I have investigated the idea of "institution" as the emergence and development of a set of mutually accepted relationships that together constructed the social structure within which group or organizations reside. So far, what this study suggests in particular is that the actors' decision-making behaviors are not only based on their embeddedness in the structure but also their active contribution in the formation of the structure itself. In the field of urban planning, the concept of "institutions" has often regarded as a set of rules that will constrain the "freedom" of actors, but at the same time, providing stability of functioning for actors' social life. Such is essentially an equilibrium

perspective of what constitute as institutions. And this point of view may have been remiss of the factor of change into the theoretical picture. A paradox thus arises when theorists are trying to explain or make sense of how a structure based in stability or equilibrium can at the same time provides opportunities for change (Giddens 1979). The key to resolve this seemingly contradictory "paradox", I would argue, is by shifting the focus instead on the dynamics of decision-making of actors within the structure, thus making the feedback loop between structure and action an explicitly identifiable process. It is from this line of logic that I bring in the concept of "institutionalization". In this context, it is defined as a process from which institutions emerges, thus putting an emphasis on both procedural side and the structural outcome sides of the "paradox". If one act of initiation of a unidirectional tie or connection from one actor to another can be understood as the primary starting point from which institutional structure arises, the process from which the relationship become reciprocal, I argue, will be essential in examining the actual steps of institutionalization, thus integrating "change" and stability" in an explicitly observable way.

The current results of this part of the study revealed that there are different observable types of institutionalization that can be utilized to understand the dynamic state between "change" and "stability" of the paradox of institutions. And within these

various types, there are degrees of institutionalization. The reciprocation of ties in this context can show us the different stages of institutionalization of communication and collaboration relationships among actors at various points of time. First of all, communication relationships in this study, were defined as information exchange connections among actors and generally did not involve a deeper commitment on the side of actors. Collaboration relationships, on the other hand, involved further binding agreement on the sides of both actors, such as jointly managing and carrying out field projects or programs that aim to provide long term benefit for particular local communities after the earthquake. Therefore, the two types of connections yield structures that could be qualitatively different in terms of the functions of the intended performance.

The process of institutionalization, accordingly, can be categorized as these two different types and each with varied degrees of evolution. As the reciprocity measure increases for both networks, the pace of an initial stage of institutionalization can be made observable. Differentiating such paces of change occurring in the targeting structural processes may be necessary to link institutional change to policy implementation for disaster preparedness and mitigation purposes. This necessity can be exemplified in two consecutive stages of planning policy making and implementation.

The first step is to determine whether the policy aims to increase the efficiency of information flow and communication, or to facilitate the opportunities for project collaborations among the actors in the civil society. Once the types of targeting institutional structure are set, the second step will involve using the reciprocity measures for each type to understand what exactly has been going on in the evolution process. For example, the increase in reciprocity from before the earthquake to shortly after the earthquake for collaboration networks would suggest that actors were not only at a stage of engaging high level institutional-building activities but also at a higher level of motivation to disaster recovery. When more attention is paid to the social aspect of recovery in the longer term, policy can be formulated to facilitate the opportunities and enhance the capabilities of civil society actors to be involved in the local communities that experienced weakened social support systems as a result of the disaster event. The timing of each stage that pointed to more dramatic levels of change, such as the periods before and right after the earthquake, can also be informative in providing signals to policymakers in when to implement certain interventions for reaching the intended outcomes.

Transitivity

Pre-Earthquake

Now, I will look at the transitive triplet formation for project collaboration networks over time. Table 5.2.2 shows the comparison between the results for communication and collaboration networks over time.

Table 5.2.2. Triadic Relationships in Communication and Collaboration Networks (Transitivity Measures)

	Communication			Collaboration		
	$\{AB, BC, AC\}$	$\{AB, BC, anything\}$	Transitivity	$\{AB, BC, AC\}$	$\{AB, BC, anything\}$	Transitivity
t1	283	902	31.37%	19	84	22.62%
t2	4328	12458	34.74%	148	765	19.35%
t3	6101	16067	37.97%	300	1538	19.51%

Before the earthquake, there were only a total of 19 transitive triads in the collaboration network. And the number of cases where a single link could complete the triad was 84. The pre-earthquake transitivity for the collaboration network is 22.62%. Out of all the relations that easily could be transitive, only 22.62% actually were. When the measures are compared with those from the communication networks, there were clearly less transitive triplets structures when it comes to project collaboration, particularly during the time before the disaster. This can be explained by the fact that the required commitment,

efforts, and resources are often much greater for forming and carrying out a collaboration project than that for communication with information exchange purposes. Thus, the lower measures for transitive triplets and transitivity percentages by themselves at each one of the time periods should not be taken as the sole indicator to conclude that actors at a particular point of time were less active or engaged. Collaboration ties are considered to have directions meaning that when one actor reaches out to another to develop a possible collaborative project, it does not necessarily mean that the other party will accept the initiative. Due to the possible amount of long term dedication and resources that are being involved, the decision to initiate a collaborative connection on either party is equally "valuable" in understanding the formation of this type of social structure. The tie that made the transitive triplet complete, regardless of directions, indicated the actor's actively choose to be committed in the field of practice. Therefore, it is more meaningful to compare the measures across time periods in order to examine such changes in motivation, especially before the after the disaster.

Emergency Response and Long Term Recovery

During the emergency response period, the number of transitive triplets increased from 19 to 148 by 87.16% and this was followed by another increase to 300 during the recovery stage, which amounted to 50.67% increase from the level in emergency response stage.

The cases when a single link could complete the triads went from 84 to 765, which was a 89.02% increase from before the earthquake event to the emergency response period. The quantity of transitive triadic cases such as $\{AB, BC, anything\}$ also nearly doubled to 1538 during the recovery stage. Therefore, after the earthquake, at the same time actors enacted their agency activity in initiating communication relationships with others, their behaviors were also accompanied by high level of motivation in terms of the drive to commitment. This is demonstrated by the fact that the number of incidences of $\{AB, BC, AC\}$ maintained a 50.67% increase from emergency response to the long term recovery stage.

As more actors starting to build collaborative relationships with the remaining others in the network, the cases that could easily become transitive went up by 89.02%. Perceived as opportunities from the civil society actors' perspective, they actively

recognized the possibilities within the boundaries of $\{AB, BC, anything\}$ structure. More actors were then being enabled through such a structural environment and were willing to complete the institutionalization process of a triadic structure. The reason that I used the term "enabled" here is because there was a kind of force that triggered further action of completing the transitive closures. Such force was not generated by any one actor but resulted from the collaborative synergy generated by the outreach activities across the entire network inside the civil society domain. As a result, the increased availability of intermediaries between actors also provided actors' opportunities to look for projects collaborators that formerly would not be possible without the existence of medium actors. In other words, the sheer size of the "capability set" that the actors could exercise made it possible for their functionings to expand through the availability of $\{AB, BC, anything\}$ structures. Here, I am using the transitive triplet measures of collaboration networks to illustrate these concepts such as capability set and functionings. And this is because compared to the motivations for information exchange, the intensity of the level of commitment for each collaboration tie represents a choice that is more enduring and better reflects the opportunities in terms of long-term trajectories that actors can act out their commitment and devotions.

It is apparent from the very last column of collaboration transitivity figures (see table 5.2.2), the percentage of transitive triplets by all the relations that are easily to be completed with one tie, there is a decrease of approximately 3% when comparing before and shortly after the disaster. One interesting aspect of the development of transitivity ties for collaboration networks is that it experienced an initial shock going down from 22.62% to 19.35%, then it slowly picked up its pace to 19.51% over the long term recovery period. This type of trend could be due to the following reasons. One is the nature of commitment and level of devotion for collaboration transitive ties. After the earthquake, as more actors were being increasingly embedded into the network structure, the cases that could easily become transitive such as structures of $\{AB, BC, anything\}$ also increased dramatically as showed earlier. Thus, the opportunities for those such as actor A to reach out to actor C to actively close the transitive triplet structure among A, B, and C increased accordingly. However, the expansion in choices within their "capability set" was one thing, but the execution to actually establish a collaborative project by reaching out to the "friend of a friend" is a different matter altogether. In the case of $\{AB, BC, AC\}$, for actor A to actually make a decision to initiate a connection that is based on potential project collaboration, A has to take into account of factors such as the match of interests between A and its target C, commitment to the field of practice

and expertise development, project location, as well as the intended duration of the possible project. Compared to building communication ties, collaborative structure formation required additional steps for projects to come into being and each step taken along the way represented the higher level devotion on the part of the civil society actors. Therefore, shortly after the disaster, although both the number of $\{AB, BC, AC\}$ structures and $\{AB, BC, anything\}$ structures increased significantly at the same time, the latter increased by a higher percentage than the former measure. The result of this was a temporary fall of transitivity for the emergency response period. Over the long run, more collaboration ties were being established as actors took the time to get to know each other. Therefore, in the discussion of transitivity structural changes over time, it would be premature to simply conclude that actors were less committed to collaboration with each other right after the earthquake. In the context of understanding institutional-building within the civil society domain at times of catastrophic changes such as disasters or crisis, it is useful to take into account of the specific types of structures under consideration and weighing the different factors that might be affecting the institutionalization process.

Clustering

Moving on to the formation of clustering structures in the collaboration networks over time, let us compare the clustering coefficient measures of the communication networks to the project collaboration networks. As shown in table 5.2.3, the first featuring difference is that the overall graph clustering coefficients are consistently lower in quantitative measures for collaboration networks than that of the communication network.

Table 5.2.3. Cross-Network Comparison of Clustering Coefficient

	Communication Network (Motivational)			Collaboration Network (Commitment)		
	Overall clustering coefficient	Weighted clustering coefficient	Overall Density	Overall graph clustering coefficient	Weighted clustering coefficient	Overall Density
t1	0.341	0.129	0.0122	0.114	0.066	0.0040
t2	0.455	0.139	0.0544	0.236	0.084	0.0127
t3	0.496	0.167	0.0631	0.223	0.101	0.0164

For the more commitment-oriented collaboration networks, while the clustering shortly after the earthquake increased from 0.114 to 0.236, the measure dropped to 0.223 during the long term recovery period. However, after weighing the differences of neighborhood sizes inside the network structure, the measures of clustering coefficients kept a tendency

for increased clustering. The level increased from 0.084 to 0.101 for the two periods after the disaster. One unique feature of this change process is how quickly the incidences of clustering actions in project collaboration caught up with the agency that built up the communication clustering structures. Note that the commitment-oriented collaboration clustering for both before and shortly after the earthquake turned out to be lower than those of the motivation-oriented communication networks. However, during the longer-term recovery period, the commitment level in terms of clustering through collaboration ties (0.101) became almost comparable with the actors' drive to exercise agency freedom observed through the level of communication clustering (0.167).

This is an encouraging sign in formulating theories that provide possible alternatives in understanding the process of emergence of civil society in crisis situations. In the context of Wenchuan recovery, it had been a consistent character for the civil society actors to be more willingly to execute their agency for relationship-building through communication networks. This tendency can be demonstrated by a couple of network measures that I have looked at. They include cohesiveness measures such as density, reciprocity, and transitivity. The higher clustering levels for communication networks across all time periods again illustrated the tendency for actors to act out their agency freedom in the information exchange type of networks. For the emergency

response period, information exchange was more densely clustered as compared to before the earthquake. This is understandable because the primary intention at that time was to focus on providing immediate assistances to alleviate the catastrophic impact of the disaster. The situation itself prompted a sense of urgency for actions to communicate mainly due to the underlying motivation of the actors to help local communities with whatever the resources were available at the time. This way, the motivation itself was quickly revealed through the information exchange behaviors. For the collaboration networks however, motivation itself alone would not guarantee a successful emergence of a project collaboration tie between two actors. Collaboration relationships represent a level of commitment that would take into account all aspects of development in which actors were engaged. As stated earlier, these include the field of expertise, location of practices, resources available, etc.

In the context of this study, the fact that the level of clustering for both communication and collaboration networks experienced growth throughout the same time frames is another indicator of the nature of civil society emergence in the Chinese context. This informs us that civil society actors possess both motivation for original action and commitment for sustained institutional-building over time. The fact that clustering coefficient for the collaboration network during the recovery period almost

caught up with the level of communication network at the same time stage is one of the most significant indicators showing the actors were being increasingly committed. This indicated a tendency for the ties within the collaboration structure to be further institutionalized. Since this research study was conducted to reveal the reality from civil society actors' point of view, the stories of structure formation and sustainability were in turn designed to emphasize the active side of the nature of civil society. At this stage of the analysis, I look next at the communication networks as a representation of motivational social structure and the collaboration networks as a representation of commitment social structure.

Pre-Earthquake

Let's now visually examine the collaboration network in order to further illustrate the changes of clustering coefficients over time. At the time stage before the earthquake, the weighted clustering coefficient for the collaboration network is 0.066, which is higher than the overall density of the whole network (0.004). This demonstrates that there was already certain degree of clustering at this period. Looking at the collaboration network graph for the stage before the earthquake (see figure 5.2.1), the first visually stunning

feature of this network is that it is separated by two distinct clusters, aside from the "isolates" listed on the very left hand side of the picture. These "isolates" are the actors that did not engage in any collaboration projects with others. Both of their in-degree and out-degree were zero.

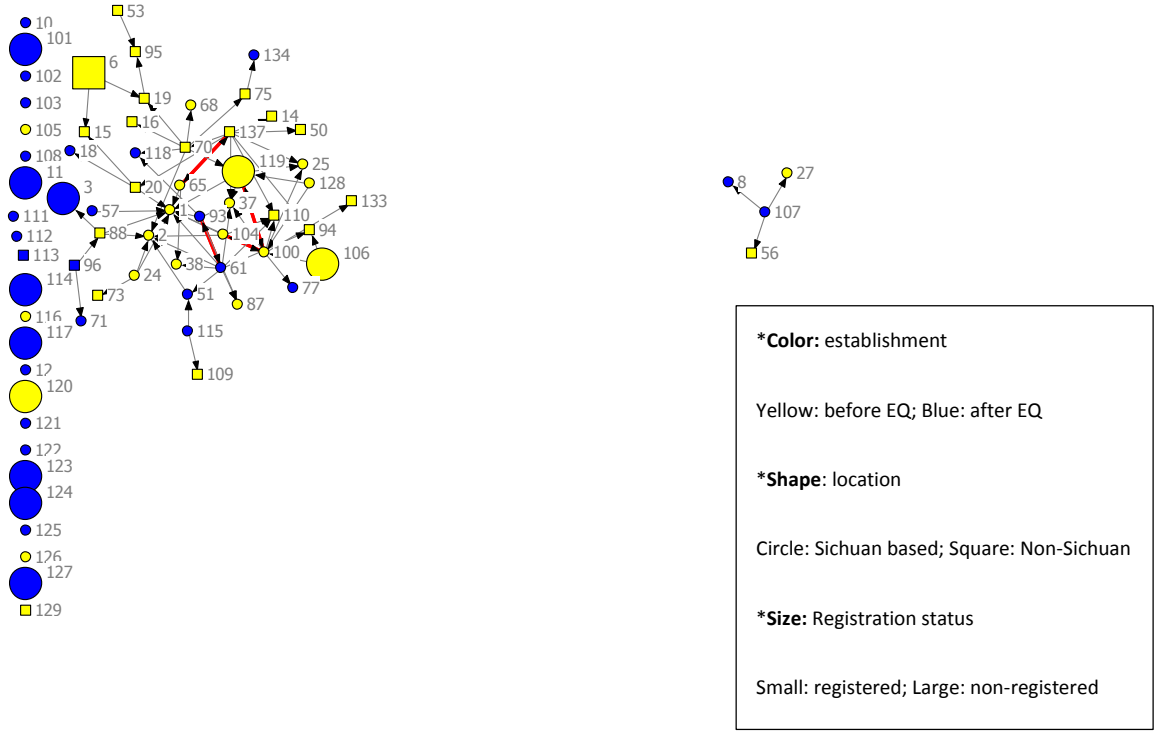


Figure 5.2.1. Pre-earthquake Collaboration Network (Combined Actor Attributes of Date of Establishment, Geographic Location, and Registration Status)

Those who were active in project collaborations can be further divided into two types of connection structures. One is the larger connected network with the majority of the actors inside of it. The other one was structured as an "isolated tree" composed of only four actors. It is called the "isolated tree" because none of them were connected to

the majority of the actors and nor were they collaborating extensively with each other. Actor #107 actively reached out to #8, #27, and #56, thus it had a local neighborhood size of three. But none of these neighbors were connected to each other. So when calculating the density for this particular neighborhood by leaving out the focal actor itself (#107), the measure would give the clustering coefficient for actor #107 of zero because all of the three others would become isolated without the outreach effort of #107 in maintaining their collaborative relationships.

The cluster containing the majority of the actors was relatively more loosely connected compared to the structure of communication network at the same period (shown in figure 5.2.2). The collaboration network also had fewer reciprocated connections (ties colored in red) as compared its communication counterpart.

Communication **Collaboration**

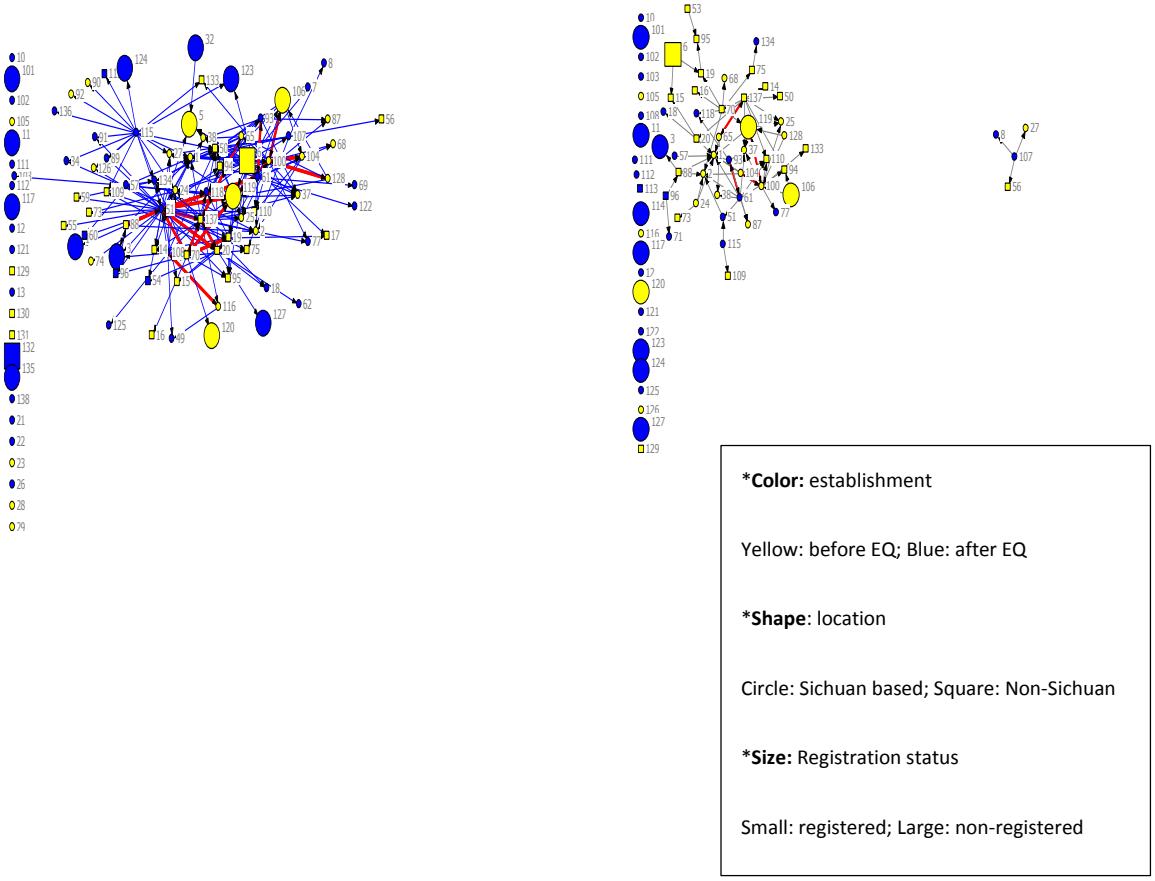


Figure 5.2.2. Comparison of Pre-earthquake Communication and Collaboration Networks (Combined Actor Attributes of Date of Establishment, Geographic Location, and Registration Status)

The overall pattern of the output results for node level cluster coefficients [103] demonstrated this point. The average size of the local neighborhoods for those included in the network was smaller than its communication counterpart. Out of all the possible ties in the immediate neighborhood of each actor, fewer of those actually turned out to be present. In other words, the percentage that pairs of neighbors were connected out of all

[103] Please see Appendix 5.2.3*A*1 for sample comparison from the UCINET output.

the possibilities also turned out to be relatively low. Most importantly, the disjointed nature of the collaboration network before the earthquake indicated that actors in the civil society were less aware of each other's existence and areas of specialization. They were also relatively more self-focused and dependent on the state sector to make their commitment in project formation. For example, the state actor (#1) had one of the highest numbers of local neighbors at this period of time. Out of its 45 pairs of neighbors, 6.7% turned out to be present. The next highest level of neighborhood size is 36, appeared for actors #137 and #61. For actor #137, none of its neighbors actually had collaborations with each other. For actor #61, only 5.6% of all these possible collaboration ties actually were present at the time. In summary, the general clustering feature for this network was that civil society actors tended to develop collaboration projects with only limited number of others rather than having expansive and diversified collaborative partners. Also, the local neighbors for one particular actor did not tend to have collaborative ties with each other. The general synergy of behaviors for civil society actors in this network was one characterized by limitation, disconnectedness, and commitment actions that were relatively inward-looking.

Emergency Response

The situation changed immediately after the earthquake event. The dynamics of change was most dramatic and obvious during the emergency response period. A visual inspection of figure 5.2.3 below showed that the collaboration network became increasingly more integrated with more actors being embedded into the different clusters of neighborhoods.

Communication **Collaboration**

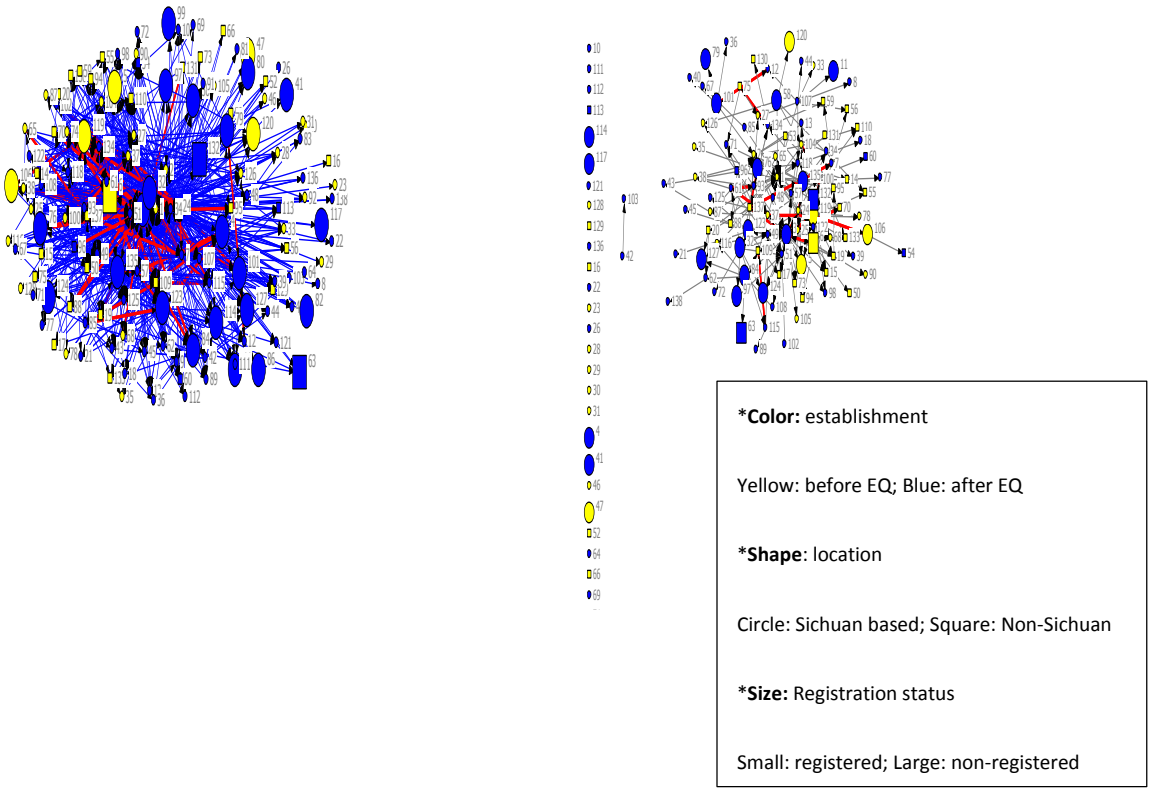


Figure 5.2.3. Comparison of Emergency Response Communication and Collaboration Networks (Combined Actor Attributes of Date of Establishment, Geographic Location, and Registration Status)

Indeed, the weighted overall graph coefficient for project collaborations went up from 0.066 to 0.084, which is about eight times higher than the overall density of the graph (0.0127). With increased level of clustering[104], there were still actors not included in the collaboration network and acted out by either being "isolates" listed on the left-hand side of collaboration graph or being an "isolated tree" composed of actor #42 and #103. The collaboration between these two actors was completely disconnected with the main structure of the network. For those who were already inside the main structure, the actors were being more enthusiastic and open about reaching out to others to develop collaboration projects. This is reflected in both an increase in focal actor's local neighborhood size and higher level of clustering coefficients when more collaboration connections were actually being realized out of all the possibilities around the different neighborhoods. Overall, despite of the continuing existence of some non-participating actors, the clustering measures of emergency response period revealed that the civil society actors became more open-minded in diversifying their collaboration partners and were willing to take actions towards making commitments. From figure 5.2.3, we can note that this attraction force to build collaboration ties was accompanied by the complete integration of the communication network at this period of time. We can also recognize

[104] Please see Appendix 5.2.3*A2* for sample comparison of the two types of networks during emergency response.

that during this time, more newly emerged grassroots actors, both formal and informal, became embedded in the highly clustered section of the graph. These include actors such as #3, #123, and #49.

Recovery

The most distinguishing development of the formation of collaboration networks for the long term recovery period was the disappearance of "isolated trees" in the graph (shown in figure 5.2.4). Actors #107, #27, #8, and #56 that used to be acting in their own "enclave" before the earthquake, along with the collaboration between actor #42 and #103 that were being separated from the main connection structure during the emergency response period, all joined together into the collaboration network. The density of the whole graph is 0.0164. And the clustering density of local neighborhoods (0.101) turned out to be much higher than the overall density, thus indicating high clustering activities being maintained through the long-term recovery stage. More actors were being embedded in relatively highly clustered neighborhoods[105].

[105] Please see Appendix 5-2-3 (a3) for sample comparison of the two types of networks during recovery stage.

Communication **Collaboration**

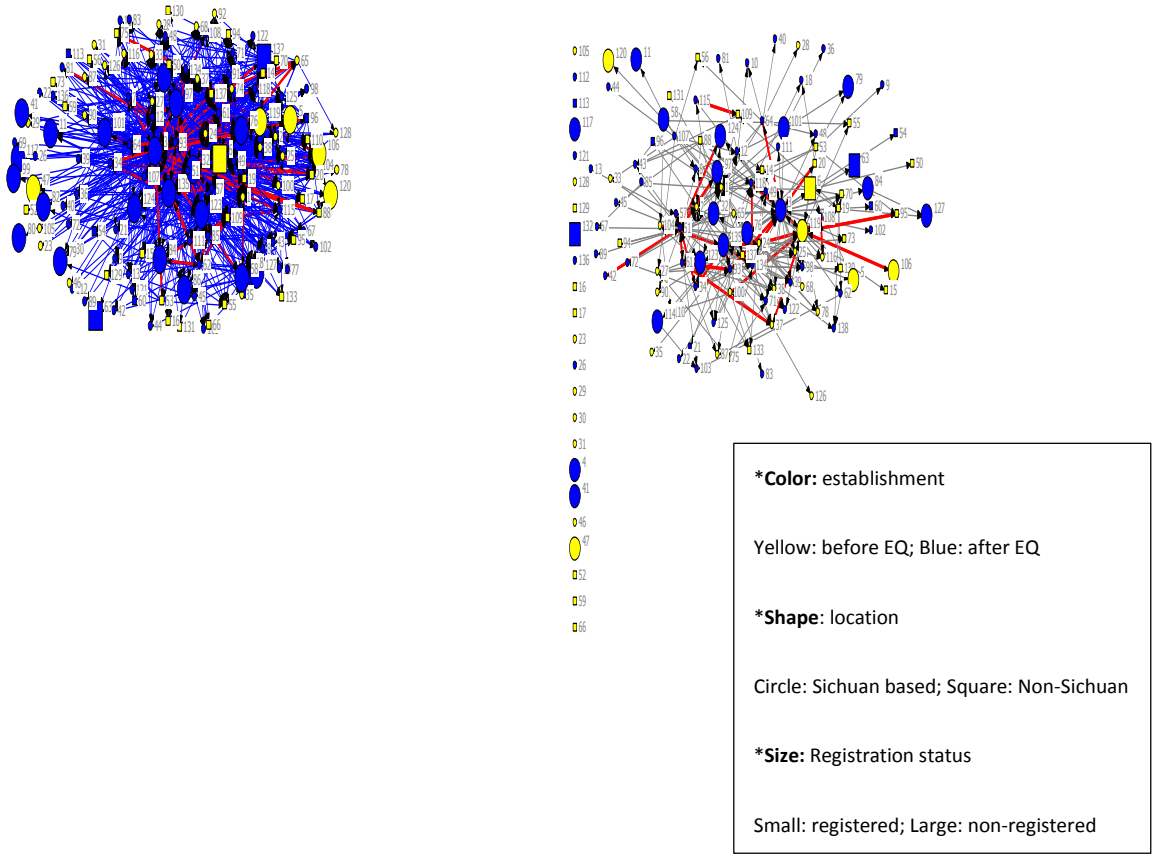


Figure 5.2.4. Comparison of Recovery Communication and Collaboration Networks (Combined Actor Attributes of Date of Establishment, Geographic Location, and Registration Status)

At the same time that agency actions in making primary connections through information exchange remained to be further integrated and cohesive (see communication network graph in Figure 5.2.4), the synergy of openness and activity in developing collaboration projects endured and enhanced as compared to the previous period. Civil society actors also perceived that the state and the business sectors as critical partners in developing collaborative efforts for long term earthquake recovery. The state actor had an expanded

neighborhood size of 325 possible ties with 6% of them being realized into actual collaborations. Recall that during the period before the earthquake, it only had 45 possible ties with the potential to develop into collaborations. When the percentage of actual realization of those ties for both periods stayed around the same level, it means that more of the civil society actors actually engaged the state to cultivate collaboration ties over time. For the private sector, it had 91 possible collaboration ties in its immediate neighborhood at the recovery time. Therefore, the business sector was also perceived as an important player in the collaboration network and it was increasingly being embedded in highly clustered neighborhoods. At the same time, 12.1% of these ties turned out to be present. As compared to the measures before the earthquake when only 15 pairs of actors were in its local neighborhood, there was a rather drastic change in the collaboration structure providing increasingly more opportunities for private sector in the market system to engage civil society actors in project collaboration efforts. Evidence also indicated that this built-up potential was not fully utilized as out of all the possible ties among its neighbors, only 3.3% of the potential collaboration relationships were actually present.

In retrospection, the examination of the above measures of clustering demonstrated a self-evolving process of structure clustering among actors with different

sizes of local neighborhoods. Originally "awakened" by the catastrophic impact of the earthquake, the agency spirit of the civil society actors was "stirred up" through the coming-together efforts for emergency response across sector boundaries. The motivation and willingness to connect and build-relationships with other groups and organizations were revealed in the fact that more actors were being increasingly embedded in highly clustered local communication neighborhoods. At the same time, the clustering actions also showed high level of determination for civil society actors to be committed in the field practice for the long term. Such results are in general in accordance with what I have found from the formation of dyadic and triadic communication and collaboration relationships.

Registration Status Group-external and Group-internal Ties

In the last chapter, recall that I focused on the analysis of group closure based on registration trait for the communication network structures. Note that in this study, the communication networks represent a type of social structure that reveals the underlying motivations of actors. In order to look deeper into the commitment side of the story, we need to investigate further to see if there were variations of group bounded-ness resulting

from actor traits in the project collaboration networks. It is also important to examine the structure of cross-sector collaborations among the state, the market, and the civil society in the context of sub-groups, which will be dealt with separately in one of the later chapters. The possible in-group and between-group collaborations categorized by registration status will also have important policy implications for civil society capacity-building from a disaster response and recovery perspective.

One point worth mentioning here is regarding the treatment of the nature of collaboration ties for calculating the measures in this section. When considering group internal and external ties in the current network analysis, the directions of ties, whether incoming or outreach, were not taken into consideration. If one actor nominated the other actor to be its project collaborator, regardless of whether such a tie was being reciprocated by the other, the connection was still counted as the existence of one tie between the two actors. On the one hand, it is certainly possible for collaboration ties to have directions in this research context and one factor that could have contributed to this phenomenon is due to a set of possible "mismatched" understanding of collaboration projects among the participating actors. While it is not possible for current network analysis program to capture the nuances of distinguishing all the possible definitions from the actors' perspective, it does allow the study to treat ties that could partially take this

factor into consideration. And this is the case for all the other analyzing sections that are being discussed. On the other hand, the reason that the ignorance of tie directions is allowed in this particular section is because of the nature of the structure in consideration here. The emphasis of the discussion on group internal and external ties is based on actor attributes such as registration status in this case. Thus, whenever a tie is being named by one actor, it is the grouping of these ties based on a particular category of attribute that are the key consideration in this part of the analysis. As a result, the following analysis is conducted when taking these arguments into account so as to move forward with the available interpretations.

Density Matrix

Let's start out by examining the changes of the density measures for the three consecutive periods. I will first compare and contrast the patterns of change in the overall density within and across registration status groups for collaborative networks both before and after the earthquake. As shown in table 5.2.4, for the time period before the disaster, the densities for cross-group collaboration (0.009) are higher than within group collaboration (0.007).

Table 5.2.4. Communication and Collaboration Network Pre-Earthquake Within-Group and Cross-Group Density Measures (Registration Actor Attribute)

	Communication		Collaboration	
	Group 1 (registered)	Group 2 (non-registered)	Group 1 (registered)	Group 2 (non-registered)
Group 1 (registered)	0.017	0.031	0.007	0.009
Group 2 (non-registered)	0.031	0.017	0.009	0.007

This means that before the earthquake, project collaborations across registered and non-registered group actors appeared to be more prevalent than within group actions. However, the in-group and cross-group densities were significantly lower for collaboration ties than those in the communication network at the same period of time. Cross-group communication was at a density level of 0.031 while the collaboration density level was at 0.009. Immediately after the earthquake, as shown in table 5.2.5, the density measures for the registered in-group collaboration ties went up from 0.007 to 0.024. The measure for the non-registered in-group collaboration ties went up from 0.007 to 0.017. However, compared to the communication network, the within group and cross-group initiatives in building collaboration ties was still not as high in intensity.

Table 5.2.5. Communication and Collaboration Network Emergency Response Within-Group and Cross-Group Density Measures (Registration Actor Attribute)

	Communication		Collaboration	
	Group 1 (registered)	Group 2 (non-registered)	Group 1 (registered)	Group 2 (non-registered)
Group 1 (registered)	0.098	0.107	0.024	0.023
Group 2 (non-registered)	0.107	0.074	0.023	0.017

Also, project collaborations among registered actors became more prevalent than those made among non-registered actors at this stage. At the same time, the cross-group collaborations increased from 0.009 to 0.023. On the one hand, this suggested that not only more actors became participants of the collaboration network but also more collaborative projects were being established among them. On the other hand, the density of cross-group project collaboration was as high as the within-group collaborations among the registered actors (0.024).

Over the long term recovery, from the results shown in table 5.2.6, one of the most noticeable changes in the group closure structure was that the density for cross-group collaborations (0.034) became higher than its within-group counterparts (0.028 for registered group and 0.025 for non-registered group). When comparing the measures

before and after the earthquake, actors clearly became more engaged in collaboration not only within their own registration status groups but also reached further across the institutional status divide.

Table 5.2.6. Communication and Collaboration Network Recovery Within-Group and Cross-Group Density Measures (Registration Actor Attribute)

	Communication		Collaboration	
	Group 1 (registered)	Group 2 (non-registered)	Group 1 (registered)	Group 2 (non-registered)
Group 1 (registered)	0.108	0.128	0.028	0.034
Group 2 (non-registered)	0.128	0.089	0.034	0.025

At the same time that cross-group collaborations were gaining prevalence over time, the process was accompanied by the consistent increase in the total number of collaboration ties. Tables 5.2.7, 5.2.8, and 5.2.9 showed that collaboration efforts within registration status groups increased from 86 to 300 from before the earthquake to emergency response. It maintained its upward trend to 350 during the recovery stage. Collaborations made across registration status groups experienced a change from 58 ties to 144 immediately after the disaster and such efforts kept going all the way into the longer term with 216 project collaboration ties made during this time stage.

Table 5.2.7. Collaboration Network Pre-earthquake Whole Network Results of Group Internal and Group External Ties Based on Registration Actor Attribute

	Frequency	Percentage	Possible	Density
Internal	86.000	0.597	12584.000	0.007
External	58.000	0.403	6322.000	0.009

Note: Total ties=144

Table 5.2.8. Collaboration Network Emergency Response Whole Network Results of Group Internal and Group External Ties Based on Registration Actor Attribute

	Frequency	Percentage	Possible	Density
Internal	300.000	0.676	12584.000	0.024
External	144.000	0.324	6322.000	0.023

Note: Total ties=444

Table 5.2.9. Collaboration Network Recovery Whole Network Results of Group Internal and Group External Ties Based on Registration Actor Attribute

	Frequency	Percentage	Possible	Density
Internal	350.000	0.618	12584.000	0.028
External	216.000	0.382	6322.000	0.034

Note: Total ties=566

This is an encouraging piece of evidence signaling a gradual institutionalization process represented by the commitment-oriented collaboration structure between registered and non-registered actors. As more emerging grassroots voluntary groups started out with a non-registered status during the immediate short term response period,

the fact that over time, these actors became increasingly embedded in collaborating relationships with registered actors reveals the following. First, this kind of behavior pattern showed that actors in the network were being increasingly committed to cross-group collaborations. Second, the informal grassroots groups that were smaller in size and less in experience would have higher chances to grow and learn from being involved in the same projects with those registered actors, who often had more expertise and experience in the field. Thirdly, the dominating prevalence towards cross-group collaboration over the longer-term signified a primary stage of civil society emergence through the institutionalization of a collaborative structure that was based on actor commitment, long term devotion, and most importantly climbing willingness and agency efforts to break the boundaries of separation.

Rescaled E-I Index

After taking into consideration of the different group sizes and the density measures, I examine the re-scaled E-I index for collaboration networks over time (see table 5.2.10).

Table 5.2.10. Collaboration Network Re-scaled E-I Index

	t1	t2	t3
Re-scaled E-I Index	-0.194	-0.351	-0.237

The E-I Index measure for the period before the earthquake is -0.194, which can be interpreted as there was a slight tendency towards group closure at this time stage. After the event of the disaster, the index was temporarily up to -0.351 and this suggests that there was a further tendency for collaboration ties to move towards group closure at the period of short term response. However, the trend made a reverse turn during the long term recovery stage by decreasing to a level of -0.237. From these results, what we can conclude regarding the change pattern of collaborative behavioral tendencies throughout the three time periods are three folds. Firstly, immediately after the earthquake, there was a surge of tendency towards in-group closure, given the group size constraint and the overall density at the particularly time stage. Secondly, the tendency towards group closure waned over time into the long term recovery stage. Thirdly, as civil society actors became increasingly committed to the field by establishing project collaboration initiatives among each other, they also tended to take less consideration of the registration status of their project partners. What this suggests is that the focus of efforts in establishing a collaboration tie was status-based according to registration formality or informality. Taking such a process into an understanding of the emergence of civil

society, the changes in group embeddeness also indicated that at the last stage of observation, civil society actors, driven by commitment, were actually able to self-organize and orient towards a collaborative structure that tends to be less segregated based on registration attribute. Such characteristics of institutional change inside the domain of civil society can be informative when it comes to understanding the "fabric" and "texture" of institutional change of disaster response and recovery networks.

Group Level E-I Index

Having examined some of the general group closure trends from the whole network perspective, we now turn to the results from group level analysis. During the period before the earthquake, we can see that more internal ties were being made among registered civil society actors than internal ties made among non-registered actors. At the same time, each group made 29 external ties. With only 6 internal collaborative connections, the non-registered group seemed to be more active in having collaborations with registered actors. Such tendency can be more precisely demonstrated by the group level E-I indexes shown in table 5.2.11.

Table 5.2.11. Collaboration Network Pre-Earthquake Group level E-I Index Based on Registration Actor Attribute

	Internal	External	Total	E-I
Group1 (registered)	80.000	29.000	109.000	-0.468
Group2 (non-registered)	6.000	29.000	35.000	0.657

The group index measure for registered actors is -0.468 and 0.657 for non-registered actors. Since -1 represents that all ties are internal to the group and 1 represents all ties are external, we can conclude that non-registered actors had a higher tendency for making cross-group collaboration connections. While the degree for registered actors to make group internal connections was relatively high, but in absolute value terms, the non-registered actors showed greater tendency towards building collaborations with those possessing different traits in terms of registration status. What can be inferred here is that the collaboration network during the period before the earthquake already had a set of "endowed" tendency for informal grassroots groups to have cross-group project collaborations with formal organizations in the field. Although the number of external ties quantitatively was small in size, when taking into consideration of the internal ties for both groups, the unique character of the informal grassroots groups at this stage of structure development became apparent.

Immediately after the disaster, the project collaboration structure experienced a dramatic change in terms of the number of internal and external ties for both groups (see table 5.2.12).

Table 5.2.12. Collaboration Network Emergency Response Period Group level E-I Index Based on Registration Actor Attribute

	Internal	External	Total	E-I
Group1 (registered)	286.000	72.000	358.000	-0.598
Group2 (non-registered)	14.000	72.000	86.000	0.674

First of all, the total number of collaboration ties inside the registered and the non-registered groups jumped up and this was accompanied by almost three-fold increase from 29 ties to 72 ties in external ties across the two groups. Also, the registered actors showed a greater tendency towards group closure with its index measure increased from -0.468 to -0.598. The non-registered actors, on the other hand, were more inclined to build collaborations outside of their own group. In general, the nature of group embeddeness for both the registered and non-registered actors during the immediate disaster response period remained to have similar trends in their collaboration behavior as before the earthquake. There was a continuation of collaboration tendencies for both groups but with opposite directions in terms of group closure. Non-registered actors continued to be

more open to collaborate with those registered actors in the network while the later tend to have more relationships within group.

Over time, when it was into the long term disaster recovery period, one of the most distinguishing changes occurred was a decrease in group closure tendency for registered actors when comparing the E-I Index columns of table 5.2.12 and table 5.2.13.

Table 5.2.13. Collaboration Network Recovery Period Group level E-I Index Based on Registration Actor Attribute

	Internal	External	Total	E-I
1(registered)	330.000	108.000	438.000	-0.507
2(non-registered)	20.000	108.000	128.000	0.688

And this happened at the same time when the non-registered actors kept an even higher tendency for having outside group ties. This piece of evidence corroborates with the conclusion drawn earlier when interpreting the decreasing re-scaled E-I index for the overall collaboration network. The results at the group level revealed that the change mechanisms inside the registered group might help explain the declining tendency for group closure from the overall network perspective. More specifically, as the network became denser with actors building more collaboration projects among each other over time, the tendency for within-group project collaboration among the registered actors seemed to be dissolving.

Another point to notice is regarding the timing when this change occurred. On the one hand, like the communication network, collaboration network reached its peak in terms of the connection activities during the emergency response stage. On the other hand, the declining tendency that dissolves the registration divide in project collaboration only came during the long term recovery period. One of the factors that might have contributed to the lag in the changing group closure dynamic can be the development of growing familiarity among actors, especially towards the newly emerged grassroots voluntary groups right after the earthquake. Over time, trust can be built through increasing opportunities for communication and information exchange. At the level of making commitments, what can be inferred from this type of structural change is that actors might be aware of the registration status among each other when designing collaborative projects together, but such institutional status might not enter as a determining factor in the actor's long term behavioral responses to the disaster.

Civil Society Actor Variability

Lastly, I will briefly compare the E-I index measures for some of the civil society actors across the three time periods. The main purpose for depicting the various levels of

group closure at this point is primarily in demonstrating how the individual level E-I index can be utilized to distinguish actors with various tendencies for in-group and between-group collaboration ties. When adapted into the context of disaster management, these measures can be further formulated as policy indicators for purposes to enhance the social capacity to deal with change and risk in general. The following paragraphs will illustrate what such indicators could entail when looking at group embeddedness measures.

Tables (5.2.14, 5.2.15, and 5.2.16) shown below provided summaries of those civil society actors with higher tendencies for registration status related collaboration relationships.

Table 5.2.14. Collaboration Network Ranking of Variability across Individual Actors (Pre-earthquake)

Civil Society Actor	E-I index
#100	0.8
#93	0.6
#61	0.556
#51	0.333
#137	-0.778
#70	-0.750
#119	-0.667

Table 5.2.15. Collaboration Network Ranking of Variability across Individual Actors (Emergency Response)

Civil Society Actor	E-I index
#93	0.750
#135	0.714
#100, #61	0.500
#51	0.250
#107, #118	-0.778
#49	-0.750
#3	-0.742
#137	-0.714
#119	-0.684

Table 5.2.16. Collaboration Network Ranking of Variability across Individual Actors (Recovery)

Civil Society Actor	E-I index
#135	0.846
#93	0.647
#61	0.500
#51	0.385
#19, #64	-0.750
#49	-0.714
#88	-0.667
#123	-0.500

For the period before the earthquake, actors #100, #93, #61, and #51 tended to build project collaborations with those of different registration status with themselves. Among these four actors, #51 was the only one that had newly established field office in Sichuan Province after the earthquake. Right after the earthquake, the actor had slightly higher tendencies for within-group collaborations in terms of registration status when compared to before the earthquake. But over the long term, its actions revealed a type of recognition

in building up greater cross-group project collaborations with more non-registered social groups. In order to understand the motivations behind the actor's cross-group collaboration initiatives, the following account traced the nature of its collaborative relationships with both registered and non-registered civil society actors.

The Case of Actor #51(NGO51)

The co-evolutionary process of collaborative initiatives among civil society actors and their behavioral tendencies for institutionalization towards being a "social organization" functioning professionally can be further illustrated from an example showing its interactions within the civil society sector. The following example depicts the role of actor #51 in such a co-evolutionary dynamic between collaborative relationships and growth performance inside the civil society domain.

Collaboration development with actor #8

Before the Wenchuan earthquake, as was noted by the program officer, most civil society actors would simply choose to engage in related activities in the form of informal

self-organizing volunteer teams. Not many formal professional social organizations were in existence around the city of Chengdu back at the time. After the earthquake, however, one of the many institutional transformations developed from a "volunteer team" to a formal "social organization" can be exemplified through the interactive experiences of actor #8 and actor NGO51.

> In fact, before the 5.12 earthquake, it was only a volunteer group or team that relies on individual actions, but not a formal social organization in a strict sense. This is why all of their activities were conducted in the volunteer format. But after the 5.12 earthquake, when we started to get to know each other and were chatting together…because we were all participating in the same field…they would find out that we were doing this aspect of works. They would then want us to help their group to become a formal organizational type, a professional one. Since its formation after the earthquake, we would observe to see if it will possess the potential to develop further. For example, whether it will have plans for development in the future and also shows clarity in the requirements of our programs are important factors. If the only thing that it lacks is the familiarity in developing itself on a right path, or in other words, through what steps and processes can they transition towards a professional organization. Also, if they were not sure how to handle the particular program after developed into a formal organization, under these circumstances, we will then willingly provide them with all kinds of support. (NGO51-01-08[106])

Two key factors came into play in the institutionalization process of actor #8. First, the awareness of the existence and the works of actor NGO51 after the earthquake event were critical in actor #8 becoming informed and eventually motivated. From a policy

[106] For original Chinese script please refer to Appendix 5.2.3.01.

making perspective, this signifies the importance of building various communication and information sharing platforms for these civil society actors to have the opportunities to interact with each other on a consistent basis. In this study, I have already shown that the earthquake did raise the awareness of some emerging civil society actors to take this role of being the facilitators for different kinds of platforms. What the government can do in this respect, is to provide an institutional environment that nurtures such interactive dynamics so that communicative and collaborative relationships can be developed and enhanced. Building the kind of "resilience" that bridge the institutional status divide for the society to deal with future disasters or risks in general does not just depend on the actions of civil society alone. It also requires the conscious efforts on the state side to contribute to the institutional conditions within which actions inside the civil society domain can flourish over time. The second factor being illustrated here is related to the civil society actor's own determination and awareness while being able to specify its long term goals and plans. When such an inward recognition of its role inside the civil society domain is brought about through interaction with its "peers", the actual collaborative efforts can be formed based on the areas of specialization among actors. In the current case, it was actor #8 that first contacted NGO51 and applied to be on its "incubation" program. Then, based on the expertise of the latter, the support for actor #8 came in the

form of introducing it to the "community service platform" (社区服务平台). And this provided the opportunities for #8 to be a collaborative partner and participate in one of NGO51's sixteen local service centers in order to develop the needed professional skills to become a formal social organization (社会组织), and at the same time assisting the local community development process during the recovery period after the earthquake. The program officer of actor #51 referred such "incubation" mechanism as a "support platform". What such platform was established on was not oriented towards general communication, training, or field-specific coordination like those provided by actor #3 and NGOLF. Rather, it was practice and commitment-oriented and facilitated the hands-on experiences in developing the skills of the emerging civil society actors[107].

Two types of collaborations existed within the support platform. One was the long term support that would last at least for a year. This means that what the "incubated" actor proposed to do should be intended for long term involvement in the field and at least one of its staff must be committed to the field activities full time. In the case when the actor did not have enough full time personnel to allocate for field practices, the kind of support being available was called "the periodical collaboration". And this can be illustrated through the following:

[107] For further detailed account, refer to Appendix 5.2.CaseNGO51.4 (1).

> This means that targeting some of the needs of local communities. Sometime there might not be a civil society organization providing this kind of service, and also they could not devote a great amount of human resources since they themselves are in the initial start-up stage. A shortage of staff is common for them and sometimes they won't be able to provide even one full-time employee to work in the field. For those in Chengdu, some won't be able to send employees to Beichuan to work full-time. So, what we can do is to introduce our collaboration in different phases. The program designs may be for the duration of 2-3 months short term. We can provide an opportunity for them to design the program, specifically targeting the 2-3 months period to assist the local communities on their needs. This way, we will be complementing the local civil society organizations to execute the program together. Therefore, these organizations would be called stage-wise groups/organizations. For those inside our incubator programs, we hope to provide them with more of these opportunities for them to go into the communities practicing their work there. That would be great practice on both the operation side and the program execution side of their experiences. And as a result, they would grow in a quicker pace. This is why we and these civil society groups/organization did not have previously communications or collaborations. (NGO51-01-09[108])

Two key characteristics stood out in this platform design. One is that by bringing in other local social organizations to work alongside with the "incubated" grassroots actor, the platform served as an intermediary for building further communication and collaboration connections among those that work in the same field project. Also note that such communication and collaboration ties became more of a mutual learning experience for all civil society actors being involved, particularly for the actor being supported through the incubation program. This was also the key explanation in that the two actors (#8 and

[108] For original Chinese script please refer to Appendix 5.2.3.02.

#51) did not engage in any kind of communication and collaboration ties any time before their partnership establishment through the incubation program. The nature of an establishment of a collaborative relationship came into being only since the disaster recovery period was one that based on mutual engagement and commitment aimed for long term capacity building for civil society actors[109].

Collaboration Development of Actor #51 with Actor #57

Another type of collaboration tie that came into being during the recovery period was between NGO51 and actor #57. The latter is a formal NGO performing in the different areas of social work and was originally established in Guangdong province. As was recalled by the program officer, actor #57 started its projects in the disaster areas before actor #51 did. This thus provided opportunities for the latter to observe what had worked and what had not in the different areas being selected for field practice. Upon seeking to exchange some experiences, actor #51 initiated the collaboration tie with actor #57 in the first place.

> For example, sometimes we will introduce some smaller local social organizations, mainly because our energy would not allow us to fully take care of

[109] Further detail refers to Appendix 5.2.CaseNGO51.4 (2).

> all the aspect of the work. In these situations, we would probably invite local social organizations such as (actor #57) to help us provide guidance and training. Anyhow, our ultimate goal is to build up the community service organizations at the entire earthquake impacted area. Then, we will have to coordinate resources from different sides. Aside from the government, they may come from our colleagues who already were conducting works in the area. For example, they might be working there before us, for one year or so, then, they must have accumulated some valuable experiences that can bring over to share. We will invite them to share these experiences with the local social organizations that we introduced in the program, or provide training for them regarding how to carry out works based on local conditions….so this means that they are part of our capacity-building framework design. (NGO51-01-10[110])

Note that the primary motive for the actor to establish this kind of collaboration remained to be developing local civil society actors that were trained and specialize in community services. If the collaboration with actor #8 is to be interpreted as representing a direct effort, on the part of NGO51, to develop the capacity of those emerging professional "social organizations" in a substantive way, then, the type of collaboration with actor #57 represented an indirect effort in providing an enabling and nurturing environment to facilitate the functioning of the tasks aimed by civil society actors. The two types of collaboration designs were performed through an interlocking nature not only to provide substantive content-wise resources for civil society actors to learn through practice, but

[110] For original Chinese script please refer to Appendix 5.2.3.03.

also offered valuable relational resources in the form of cross-actor collaboration ties as part of the capacity-building framework[111].

Collaboration Development of Actor #51 with Actor #61

Aside from providing social services for "local community recovery" achieved through the previous kinds of collaboration development, the third type of collaborative relationship was motivated by the actor's commitment to local economic recovery after the disaster. The actions being taken in this regard was in the form of seeking expertise from other civil society actors followed by establishing collaborative connections for implementation.

One example of this kind of collaboration can be found in its connection with actor #61. The specific project in action was called the construction of "Rural economic cooperatives" (农村经济合作组织). The main purpose was to contribute to the local economic development process as part of the long term recovery. Since the field of expertise of actor #61 was in assisting the local communities developing their skills in

[111] Further detail refers to Appendix 6.2.CaseNGO51.4(3) and also interview accounts of NGO51-01-11 in Appendix 5.2.3.04.

growing crops and breeding animal stock, it was chosen to be a collaborative partner for its expertise in participating in the local economic development process.

> Our collaboration experience is like this, they (actor #61) would act like our consulting team. We carry out the implementation side of the work, including our program execution and training provision. And they will provide the training personnel. This is because they've been conducting works in the rural areas for such a long time and gathered a lot of experiences. So they would be part of our expert group. Every phase of our field visits and training, we will be consulting with them. They can request demands and provide suggestions. From our collaboration, we will then design our entire training program and our route for field visit. So we generally take the lead while they are one of our collaborative partners. In other words, they are like our consultation team. (NGO51-01-12[112])

Therefore, the essence of the collaboration was realized through the two actors each performing its own role. On the one hand, one party played the "supportive role" as the expertise-provision team, or a knowledge-tank, because of its accumulated field experiences working with local communities. On the other hand, the second party was the one that actually implemented the final designs of the project, upon receiving field-specific trainings from the designated group of experts. As we can see, this kind of collaboration is characterized by actor NGO51 motivated in developing its own capacity in a particular area of field practice[113].

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[112] For original Chinese script, please see Appendix 5.2.3.05.

[113] Further detail refers to Appendix 5.2.CaseNGO51.4(4).

What can be learned from the commitment-oriented behaviors of actor #51 as well as those that it developed collaboration ties with is that the actor became less restrictive in terms of registration status when it comes to project collaboration. Note that aside from #51, actors such as #100, #93, and #61 were all registered formal nonprofit organizations. A tendency for them to have a propensity to collaborate with those outside their own group meant that projects were more likely to be formed with non-registered social groups in the field. From the perspective of a policy intervention that aims promoting the capacity development of the smaller non-registered domestic nonprofit groups, actors such as these with the increasing propensity towards building commitment ties across registration groups over the long term are critical to investigate.

In contrast, referring back to table 5.2.14, actors #137, #70, and #119 tended to form collaborative relationships only with those inside their own group of registration status. With the exception of #119, the other two actors were Chinese domestic registered nonprofits. Actor #119 operated as a foreign-based nonprofit and before the earthquake, it also had a higher tendency to form collaborations with other registered civil society actors.

Shortly after the earthquake, from table 5.2.15, we can see that actors #93, #135, #61, and #100 remained their position with high level of tendency to build cross-group collaborations. Another feature for group embeddedness structure at this period of time is that some of the more active newly emerged grassroots groups started out by having greater tendency for collaborating with those of similar registration trait. For example, non-registered actor #3 developed a tendency for collaborating with other non-registered social groups. On the other hand, registered actor #49 emerged to have high level of group closure for collaborative relationships. Interpreting from the perspective of civil society emergence in the context of crisis and change, this kind of behavior signified one of the primary characteristic for newly formed civil society actors to institutionalize their relationship with others in a given social structure. In this study, the E-I index measure at the actor level showed that shortly after the disaster, there was an enthusiastic synergy that drove the tendency for newly formed civil society actors to seek out each other for collaboration. Let's take a closer look at the story of #49 in this context.

The Case of Actor #49 (NGO49)

Just like actor #3 and #51, once entered into the long term recovery stage, several functions performed by actor #49 gradually developed as enablers for the institutional development of interactions among actors inside the civil society domain. One of the

most important strategies was to support "professional service-oriented organizations" through a process of what the organizer of #49 (NGO49-01) called "small project bidding" every year. The reasons why this action could be looked at as an enabler facilitating the institutionalization of interactions among civil society actors entailed an argument of three-folds. First of all, it was due to the needs of the local communities. The invitation for civil society actors to participate in projects that oriented towards providing services would fulfill the needs of the communities. Secondly, such action would also facilitate the desires of some civil society actors' to practice at the local level but lacked sufficient financial means to implement their causes. In the words of the organizer, this was to "connect demand with supply". Thirdly, the enabler originated from the goal of the organization in general to build a "resource platform" by gathering available outside resources and then "distributing to the disaster areas for community recovery", mainly through the practices of participating civil society groups/organizations. By way of these three aspects of institutional practices of the organization itself, its interactions with all other civil society actors can be categorized as a "provider" of resources for the independent growth of individual actors in the civil society domain. Although similar in its intention in building a platform for civil society actors to interact with one another, a key difference between this actor #49 and actor #3 from a relational perspective was that

the latter performed as an "intermediary" role in facilitating the connection among other actor while the former played a role as a "functioning resource provider" for others. There was an inherent one-directionality for the "provider" type of relationship because others will tend to reach out more towards the actor.

One other critical factor that performed as the "enabler" of the institutional development of within sector interactions arose from how civil society actors perceived to be their own strength of practice as compared to those implemented by the state sector after the disaster. For actor #49, its organizer pointed out what he saw as the strength of NGO practices:

> In fact, what NGOs are good at is not in the aspect of infrastructure. What we are doing is related to the so-called "soft services", such as community service area of practices. That is why we chose to focus our attention on community services during the recovery period. It is about engaging in social services when finding social workers who have a professional background, rather than engaging in infrastructure recovery. The latter is what the government has been doing. (NGO49-01-06[114])

Here, he clearly identified the importance of social aspect of the recovery phase and the participation of community services as the focus of NGO practices. This recognition also inferred that the organization as a whole was perceived to have the role of complementing the practices of the state sector. It was an institutional dynamic

[114] For original Chinese script, please see Appendix 5.2.3.06.

represented the actor's perceptions of a joint type of action between the civil society and state rather than that of a confrontational one[115].

During the long term disaster recovery period, more civil society actors that came into being after the disaster started to rank higher in their tendency for group closure. For example, looking at table 5.2.16, while actor #3 and #49 remained to be more likely to collaborate with those having the same registration status with themselves, other newly formed civil society actors include #123 and #64 joined this category at this time period. At the same time, actors #135, #93 and #61 kept their tendency in collaborating with non-registered actors. Therefore, what we can conclude for the collaborative structural characteristic during disaster recovery was that the informal social groups tended to become more supportive for each other's growth over the long run after the disaster. These non-registered civil society actors also tended to be more committed through collaboration relationships among each other. At the same time, the non-registered groups also seemed to have sustained outside institutional support from the registered nonprofit organizations both for the emergency response and the recovery period. Within the domain of civil society, what can be inferred is that the general institution-building environment tended to become in favor of the longer term growth of the non-registered

[115] For further details in Chinese script, please see Appendix 5.2.CaseNGO49.4.

grassroots groups. The availability of choices and opportunities for newly formed civil society actors to establish collaborative projects existed both inside and outside registration status groups. What this further revealed was a set of self-grown and self-recognized embedded capacity for civil society actors in this context to institutionalize and develop.

Structural Foundations of Sustenance and Support

Top-down Approach

Component

Let's now look at how the sustenance structure for agency action can be characterized when represented by the collaboration network environment. Table 5.2.17 below shows the development trends for weak and strong components throughout the three stages of time before and after the earthquake.

Table 5.2.17. Development Stages of Weak and Strong Components in Collaboration Networks

Time Period	Weak Component (Action)	Strong Component (Condition for Institutionalization)
t1	92	134
t2	38	117
t3	34	108

The number of both weak and strong components was the highest during the period before the disaster. There were a total of 92 weak components and 134 strong components at this time. For the former, the largest grouping can be found among the collaboration activities of 44 actors as illustrated in figure 5.2.5.

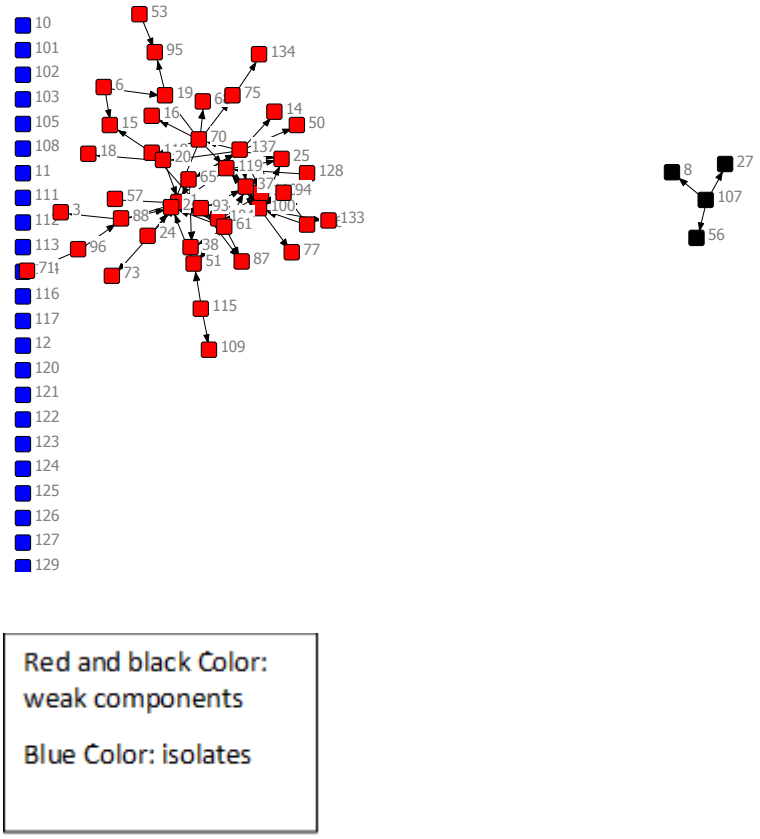


Figure 5.2.5. Collaboration Network Pre-earthquake Weak Component Structure

The isolated tree structure composed of 4 actors colored in black on the right hand side of the graph is counted as one weak component by itself. The rest of the weak

components are composed of isolated actors that either had not yet come into existence or were functioning alone without building any collaboration ties with any others at this period of time. From the results showing the counts of strong components[116], or when directions of ties were being accounted for, the structure was separated into even more pockets of groups. The largest strong component at this time period is composed of only three actors.

Shortly after the earthquake, we can see that the collaboration structure became less segregated by groups as the number of weak and strong component decreased[117]. The weak components went down to 38 and the largest grouping at this time turned out to be composed of 100 actors, which accounts for 72.5% of those in the network. Graphically, this group can be observed in figure 5.2.6 as the one colored in red. Correspondingly, the largest strong component also increased from composing of 4 actors to 19 actors during the emergency response period.

[116] Please see Appendix 5.2.3*B1* for UCINET output.

[117] Please see Appendix 5.2.3*C1* and Appendix 5.2.3*C2* for strong and weak component results.

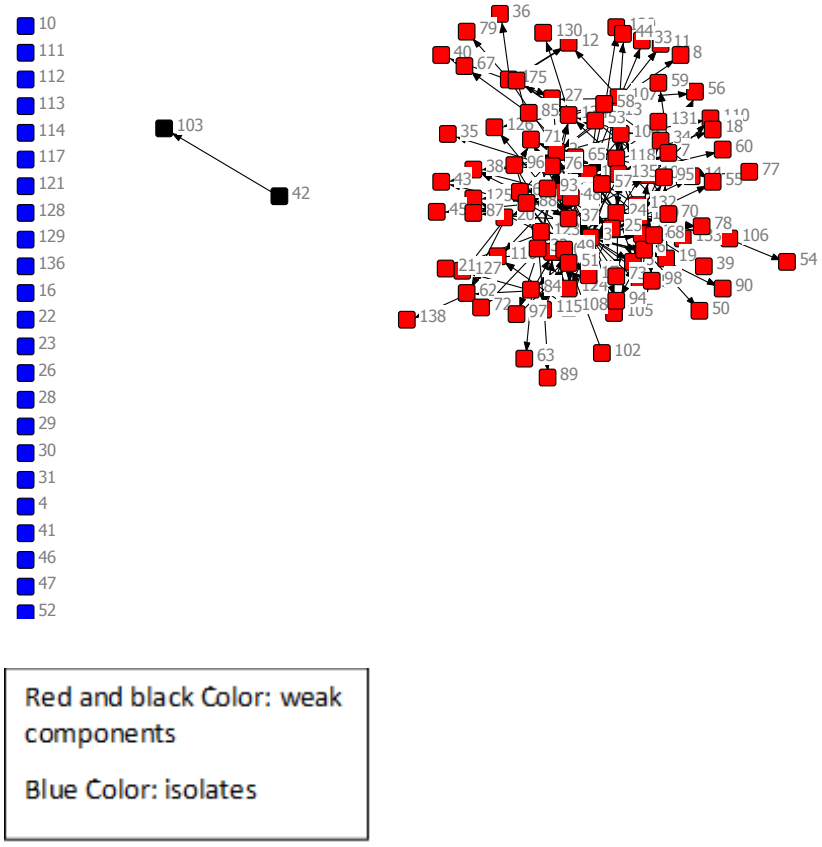


Figure 5.2.6. Collaboration Network Emergency Response Weak Component Structure

What this dynamic revealed was that as the collaboration structure pulls more actors into the main component due to the active search on the part of civil society actors, they also became more embracing in developing stronger relationship ties with an increasing number of others and were more willing to put aside their differences in terms of various kinds of attribute characteristics. In other words, civil society actors' capability of exercising discretionary choices in building collaborative projects across the network was accompanied by a process of structure integration and expansion.

The similar trends followed during the long term disaster recovery stage. Looking at table 5.2.7, the action network became more integrated to include increasing number of actors into the collaboration relationships. This was revealed through the weak components decreased from 38 to 34. Furthermore, the number of actors in the largest weak component [118] also increased to 105, which accounted for 76.1% of actors. Graphically, this is illustrated by the main connected component consisted those actors colored in red in figure 5.2.7.

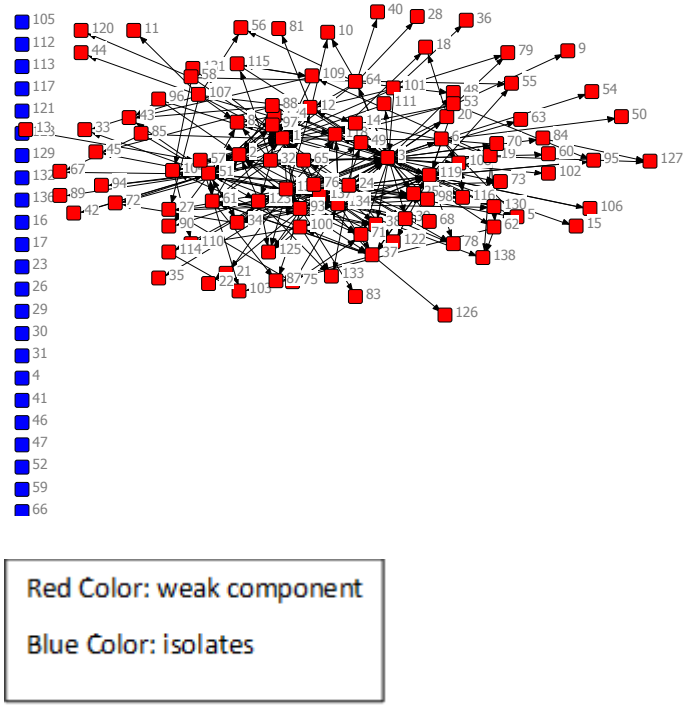


Figure 5.2.7. Collaboration Network Recovery Weak Component Structure

[118] Please see Appendix 5.2.3*D2* for weak component results.

Note that this long term stage also marked the disappearance of isolated tree collaboration structures. Except those civil society actors that did not participate in the collaboration activities during this period of time, the rest of the actors were jointly connected regardless of the direction of the ties. As the main collaborative component emerged as the result of commitment-oriented agency action, the number of actors in the largest strong component[119] kept increasing from 19 during the emergency period to 30 at the recovery stage.

Overall, these structural changes in both the weak and the strong component for collaboration networks turned out to have similar trend patterns as those in the communication networks. One can interpret the dynamics working behind these sub-structures as two types of forces that shaped the general structural frameworks for the sustainability of agency and further toward institutional change. The formation of the weak components was driven by a force of agency action on the part of civil society actors. It worked in such a way that pulled more actors together in expanding the main networked components not only for information exchange but also project collaboration. The emergence of strong components was further driven by actors' desire and capability to strengthen the connections with a selected group of others. For disaster response and

[119] Please see Appendix 5.2.3*D1* for strong component results.

recovery contexts in this study, this force in driving choice selections among actors towards further grouping also promoted expansion of stronger ties among an increasing number of actors in one particular component.

K-core Analysis

I now move on to conduct a k-core analysis for the collaboration network. Recall that the main difference in examining the communication network and the collaboration network was that they each revealed a distinct sphere of connection from the civil society's perspective. The behavior of collaboration tended to operate at the level of institutional commitment as actors maintained their agency actions in terms of groups and organizations. Therefore, finding the core set of actors in the collaboration network structure can be understood as their willingness to seek after a higher level of resilient strength particularly through the institutionalization process.

For the period before the earthquake, the core structure was found at the 3k-core level. Note that this was a relatively low degree level to draw the boundary of the core. The actors colored in red in figure 5.2.8 were not only few in number but also had rather

sparse collaborative connections with others in the connected network. This also shows signs of less intensity of connectedness among actors in the core at this period of time.

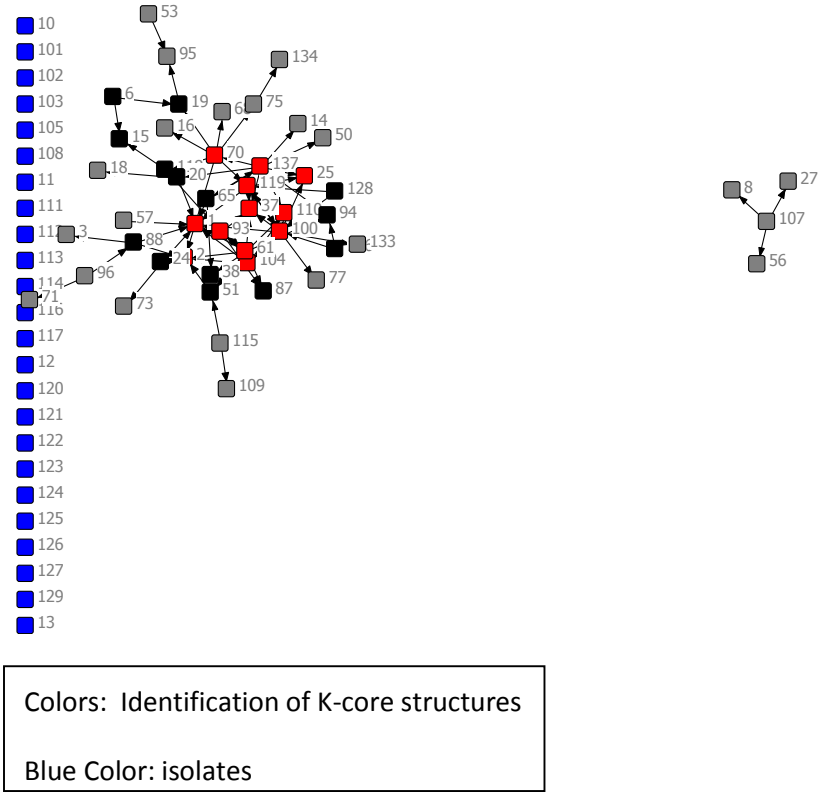
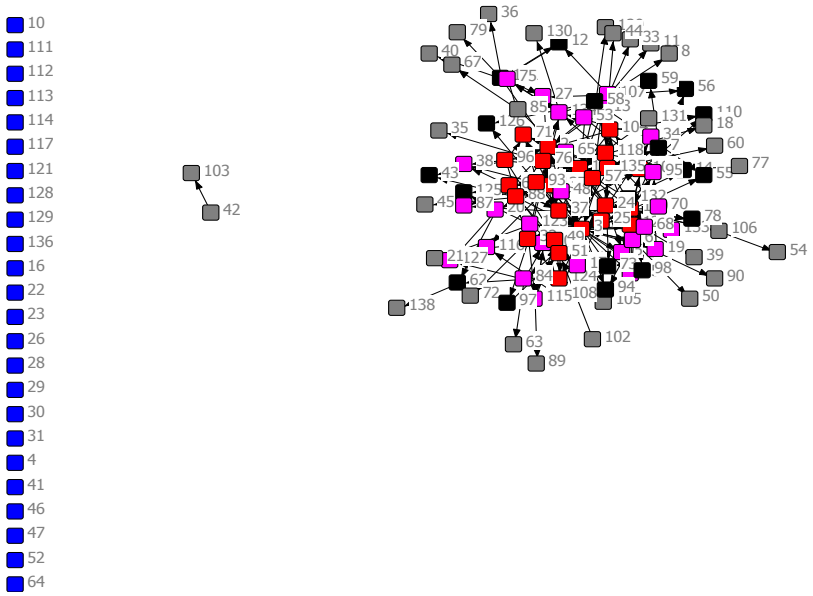


Figure 5.2.8. Collaboration Network Pre-earthquake K-core Structure

Also, when comparing to the number of core actors being found in the communication network at this same time period, there were less actors inside the core of the collaboration structure. Despite all this, the state and the market actor (#1 and #2) both belonged to the 3k-core structure. This means that before the earthquake, there was already a close bonding among the state, the market and the core members of the civil society.

Shortly after the disaster, the core structure was being found at a slightly higher 4k-core level. The actors inside the core were then consisted of those that had collaboration connections towards at least 4 other actors. This means that the project collaboration initiatives became increasingly intense, thus more cohesive for the core members. In addition to the increased cohesiveness inside the 4k-core structure, the number of actors inside the core also experienced an increase. A close examination of the composition of the core members in the collaboration network indicated that such increase was mainly the result of the activities of civil society actors. The state and the market actor remained to be perceived as key collaborating partners at this stage of time. Therefore, two ongoing structural processes can be depicted as tending to generate a change in the collaboration pattern behavior. One was the increasing commitment on the part of civil society actors inside the core. The other was the higher intensity and cohesiveness among the expanded set of core actors. The two change dynamics together generated a collaborative structure shown in figure 5.2.9, as the core members were represented in red color.



Colors: Identification of K-core structures

Blue Color: isolates

Figure 5.2.9. Collaboration Network Emergency Response K-core Structure

The collaboration behavior was characterized by highly embedded actors in the core structure with increased participation of civil society actors. During this period of time, both actors #49 and #24 emerged as new core members. Here, let me qualitatively examine the motivational sources of the emergence for both of these actors in order to trace the formation process that contributed to their core location in the emergency response collaboration network.

The Case of Actor #49 (NGO49-01)

Several factors can also be attributed to the sources of emergency for actor #49 within the civil society domain. First, although the actor's formal establishment was in 2008 after the earthquake event, its initial actions and functioning as a civil society group since the year 2005 meant that the organization as whole was not a completely newly emerged entity in terms of the timing being considered. However, when the factor of action was being considered, the self-organizing action enacted by the "coming-togetherness" of groups and NGOs across China functioning as a "joint office" immediately after the earthquake event signified a transformed level of emergence inside the civil society domain. This type of emergence was first characterized by an initial joint identification process through which different types of actors functioning inside the civil society sought out each other performing similar tasks related to disaster response. This transformation dynamic was being further stabilized as the joint entity formally established itself in the disaster-impacted area. Therefore, the "action" point of view presented a quite different nature of this civil society actor emergence through its transformation process after the disaster event.

Self-initiated "solidarity" and "cohesiveness" could be described as some of the natures of emerging sources from which this particular organization arose. This could be illustrated by first comparing the formation and self-organizing process of actor #49 (NGO49) and actor #3 (SG3). Recall that when the latter was first formed, the dynamics took place in a pre-determined social environment among acquaintances. On the contrary, when the actor #49 was first initiated, participants in the newly established "joint office" were "all complete strangers" (NGO49-01) from the accounts of the organizer. This case reflected a different aspect of the source of civil society emergence in the context of a crisis situation. Within such a short period of time immediately after the earthquake, the connection bond that formed among civil society actors originated from what the organizer (NGO49-01) called a sense of "common mission and value", rather than from a sense of trust that usually develops over longer period of time.

> LU: If none of you know each other beforehand, how has the level of trust been built?
>
> NGO49-01: I think this is an issue of mission and value-system. We are working toward the same mission, in fact, I think building trust is not an issue for the short term. This is because the time span was very short back then (emergency response period), almost like for a month or so. We all had a very strong sense of mission, and that is what I think was important, we were the so called "like-minded" people". (NGO49-01-03[120])

[120] For Chinese script, please see Appendix 5.2.3.07.

As we can see, within the one month mark after the earthquake, which was commonly defined as the emergency response period, the strength of the relationship bonding process was perceived to be primarily originated from a common sense of mission towards similar goals. The shared desire to take actions to provide voluntary assistances for the disaster-impacted areas overcame the concerns for trust-building during the emergency response period. Such was the source foundation from which the "cohesiveness" was formed when looking at the actions being taken among all the civil society groups/organizations participated in the joint office of actor #49.

The transitioning period from emergency response to short term and long term recovery also witnessed signs of institutional structural change of the actor #49. The initial "joint office" established at the very first moment of response stage was eventually replaced by a formal field office intended to function over the long term. From the account of the organizer (NGO49-01), the institutional structure of the "joint office" was constructed as a "temporary collective entity", while the field office established during the beginning stage of the recovery phase was a "permanent agency". The latter's "governing structure works in the same way as those of other formal NGOs".

As the actor emerged from a temporary office towards one that focused its permanent field practices in the longer term, the organization's activities related to the recovery phase can be categorized into the following three kinds of projects. The first type of practice that the organization focused on was the establishment of the "public spaces" inside local communities that were impacted by the earthquake. These "public spaces" were built through community centers that provided services for various groups of local people. For example, services for taking care of the children, elders, entrepreneurship and job training, as well as microcredit supports. The second type of activities was related to "social enterprise ventures" by supporting local hand-crafted jewelry-making as a way for local people learning to establish their own livelihood in the longer term. At the time of the interview, the organization explored such projects in three local communities that were significantly impacted by the disaster, and they were in: Mianzhu, Shifang, and Dujiangyan. The third type of projects that the actor as an organization focused on was of similar kind to those engaged by actor #3 (SG3), which was the formation of an "NGO support platform" (NGO49-01) particularly providing assistances for smaller domestic grass-roots. While the practices of actor #3 was perceived as supporting platforms in information and communication, the platform initiated by actor #49 was more of a financial support for other smaller civil society

actors particularly interested in initiating practices related to "community services". To put it in the words of the organizer:

> We have provided support for seven to eight this kind of small grassroots groups every year. Because it's a small amount of money, for about one million, we could support seven to eight such small groups/organizations to engage their works in community services. The experiences from these two years have been quite successful. Many of the small grassroots with only one person on staff have developed tremendously, some grew faster than the speed of our growth back then. So it's been great, I think this kind of support is a much more meaningful and interesting one. (NGO49-01-04[121])

From here, we can see that there was a key difference in the types of institutional emergence between actor #3 and actor #49. Despite of their similar core engagement in building civil society support platforms during the disaster recovery phase, they had diverging focuses in the types of services being provided towards the development of civil society actors. The former aimed at providing a bonding environment that facilitates the interactions among actors in the civil society domain. In other words, the long term "cohesiveness" among actors emerged as part of the agency source in its actions. On the other hand, actor #49 focused its actions on "particularity". Its practices aimed at the individual growth of those actors who just emerged as grass-roots NGO. Despite of these differences in action, it was the service practiced towards the assisting the institutional

[121] For Chinese script, please see Appendix 5.2.3.08.

development of others inside the civil society domain and seeing them grow in "strength" over time that instilled a sense of satisfaction and fulfillment for the participants from both entities. These can be thought as a type of "indirect" source of "solidarity" formation revealed through the network mapping investigated in the earlier chapters[122].

The Case of Actor #24 (NGO24)

When touched upon the topic of institutional action during the emergence and the recovery stages, the director of actor #24 enthusiastically related back to his own experiences in this regard. Throughout my own conversation with him on this subject at the time, I noticed that his tone of voice was filled with passion and care towards the long term development of grass-roots NGOs. His personal dedication to the works of building up a Chinese civil society was also further reflected through his awareness of the need for future capability growth for civil society groups and organizations. The following paragraph illustrated a summary of the account:

> For grass-roots groups and NGOs emerged and took actions after the earthquake event, finding different ways in keeping a balance of the "interest demands" from the government side and the general mass side is critically important. After the earthquake, the immediate needs were concentrated towards housing reconstruction which was mainly led by the government. These activities were regarded as the "hardware" side of reconstruction. The NGOs were in advantage

[122] For detailed interview account, refer to Appendix 5.2.CaseNGO49.2

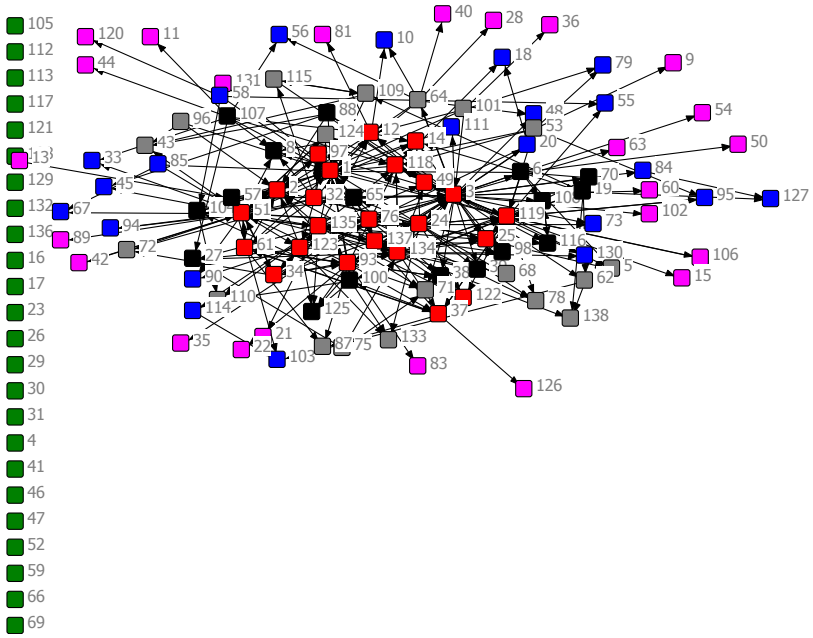
> in social reconstruction, which can be counted towards the "software" side of the recovery process. These social recovery related activities were considered to be more compatible with what the NGOs were good at practicing in the long term stage. On the one hand, from the perspective of the government, the earthquake recovery was already (at the time of the interview) towards completion since its attention for the recovery stage was primarily focusing on reconstructing the "hardware" part. On the other hand, from the perspective of NGOs, the recovery process might have just begun. However, there were all kinds of difficulties surrounding the long term functioning of grassroots NGOs, such as the exhaustion of sources of financial support and human resources. At the same time, the activities that civil society actors most dedicated into were related to community development and this area of practice would have a demand in the long term and can be sustained over time. (Summary account of NGO24-01[123])

Recall that such an awareness of the long term role of civil society and a refined definition of "disaster recovery" from a social development perspective were also in accordance with the visions shared by participants from actors illustrated in earlier sections. This showed the long term orientation of civil society actors in terms of an awareness of their roles in making the connection between disaster recovery and long term social development of the country.

Continuing examining the k-core results over the long term recovery stage, actors in the core structure developed further cohesiveness by being inside the 5k-core. Each of the core members had at least 5 collaboration ties with others, which was one connection more than those core actors during the emergency response stage. Figure 5.2.10 shows

[123] For original Chinese script, please see Appendix 5.2.CaseNGO24.2.

the graphic representation of the 5k-core structure consisted of actors colored in red. Note that the recovery stage also marked the integration of the previously existing isolated tree structure into the main connected network.



Colors: Identification of K-core structures

Green Color: isolates

Figure 5.2.10. Collaboration Network Recovery K-core Structure

Therefore, what we can say regarding the development of project collaboration network structure is that it tended to increase in cohesiveness and intensity at the core level. The collaboration behavior for the core actors mainly focused on building more connections over time. It is another piece of evidence showing not only the high level of

commitment in terms of the increasing ties being built among core actors but also an increasing willingness for civil society actors to be engaged in the longer term. Furthermore, the state and the market actors were consistently perceived to be critical collaboration partners by civil society participants both before and after the earthquake. The policy implications from a disaster mitigation perspective based on this outcome would be the possibility of mapping out the differentiating role of state and market actors from the perspective of civil society actors. With further information regarding the types of project collaboration practices for actors inside the three domains, a trend detailing the nuances in collaboration according to activity types and actor traits can be made clear. In the case of China, the collaboration among the three domains experienced a process towards high cohesiveness and intensity in terms of tie connections. This means that after the earthquake, from the short term to long term recovery, civil society actors learned to put a high value on their collaboration relationships with the government agencies and private businesses. In general, a recovery planning policy that aims to engage the civil society in this kind of structural environment can generate a higher level of participation and much more welcomed by grassroots organizations.

From figure 5.2.10, also can be noted is that during the long term recovery stage, for the first time, actor #97 emerged as a 5k-core member alongside with other newly

established civil society actors such as #123 and #49. This type of behavior deserves a further qualitative examination on the factors that contributed to its emergence at the group level.

The Case of Actor #97 (SG97)

In the case of actor #97, the motivational factor for civil society emergence can be traced back to the ways organizer interpreted several disaster related concepts as well as how they were connected to the organizer's (NGO97-01) own personal experiences after the earthquake event. Along with actors #3 and #49, the type of agency actions that were being valued among the participants across all three civil society actors was the desired contribution made towards the development of a social capacity for local communities to cope with "unforeseen uncertainties" or risks in general. These uncertainties or risks were perceived either as results from a natural disaster or from other types of crisis situations. Participating in the long term recovery period of the 2008 earthquake aroused a type of inherent motivation for building a society that is "resilient" in aspects beyond the needs to recover from one specific incident. The aspect of "sustainability" for a society to function in a "healthy" condition at the community level had been a consistent theme

throughout the development of three actors, while each of them defined "healthy" in different ways. In order to perform these functions to contribute to the making of a "resilient" society that is sustainable in terms of its ability to cope with risks, one characteristic that was perceived to be essential was stated as the "indigenous-ness" or "home-grown" civil society actors performing in this area of practices. The organizer of #97 particularly referred such "bottom-up" nature as those rooted in the efforts of Chinese people themselves.

The following were several reasons that the organizer of actor #97 gave to support her position as such. First of all, when the participation focus was in initiating long term development–oriented projects, reliance on "foreign funding agencies" often would not serve as a sustainable source when civil society activities were transforming from emergency response to long term social recovery and development. While "foreign funds" were relatively easy to obtain especially immediately after a catastrophic disaster, they are mostly "temporary" supports and rarely turn into long term assistance. If "real change" inside the society is the goal, "the power and strength developed from the society itself" would be critical. And these "strength" would not only include the appropriate domestic funding sources but also the people initiating and running of domestic NGOs. After the emergency short term response period, the attention coming from foreign agencies was

perceived to be "limited", especially under the condition when life transitioning at the ground level takes more than a few moments of emergency supports. When disaster recovery is perceived as a longer term endeavor incorporating the intentions for social capacity-building in dealing with risks, it is that "indigenous" source of "strength" that will be eventually "reliable" for supporting and sustaining long term-oriented actions.

Secondly, the carrying out of this type of sustainable long term practice on the part of civil society actors in general could not be realized without the role of the state.

> If NGOs in China want to survive and function long term, the role of government is absolutely critical. This is because of the coordination factor. You cannot avoid dealing with the political system when organizing your activities. For example, it is impossible for you to implement the activities without the permission of the government, this is the pre-condition. At the same time, the coordinating power of the government is strong too. You have to admit it objectively. The only thing is that its ways of functioning is different from us, but can generate significant impacts. (SG97-01-06[124])

The appropriate coordination with the government through all kinds of NGO activities was treated as a pre-condition for long term functioning of Chinese NGOs. The consideration of being informed on the part of the government is regarded as an active sign of its cooperation with the NGO activities in the field. Again, the complementary role of civil society in this particular political and cultural context was well recognized.

[124] For original Chinese script, please see Appendix 5.2.3.09.

Note that such "complementarity" was perceived to be revealed in NGOs functioning through different task channels aside from those traditionally performed by the state. For the case of this particular actor #97, such difference arose from the diverging ways of making fundamental changes not only to how people live their lives but also in how their ways of thinking and perception in developing a "resilient" society that would be well equipped for crisis situations. Government, on the one hand, was well-fit for conducting direct informing-oriented activities for the target population. Civil society actors, on the other hand, was advantaged in exerting their strength through a process of "gradual influence" that requires "a very long time for trail-and-error and adjustments" with close proximity and emersion towards the local communities[125].

Therefore, the emerging 5k-core membership of actor #97 during the long term recovery stage generally arose from two factors related to its institutional establishment. One was the focus on developing indigenous sources and strength for disaster recovery and long term social development. The other was the recognition of building a resilient society through a very gradual process of influence from the practices of civil society actors.

[125] For detailed interview account, refer to Appendix 5.2.CaseSG97.2

Community Structuring in Project Collaboration

The Girvan-Newman Detection Method

In Part I of this Chapter, I have shown that communication actions inside the civil society domain after the earthquake actually worked in favor of generating cohesiveness response and recovery efforts. The community structures developed before the earthquake quickly dissolved after the disaster and this happened at the same time when new actors were emerging in the field. This kind of timeliness in terms of information exchange dynamics was a key indicator in perceiving the level of willingness for civil society actors to take action after a catastrophic disaster and their desire to make an impact for response and recovery.

In this section, I compare and contrast the community structure development of collaboration networks over the three time periods. First of all, the color representation in figure 5.2.11 below shows the different communities being detected by the Girvan-Neman method [126] in various color representations. It is apparent that the largest connected community being identified was composed of the nodes colored in red.

[126] For Gephi graphs using the Louvain method, please see Appendix 4.2.3*G1*.

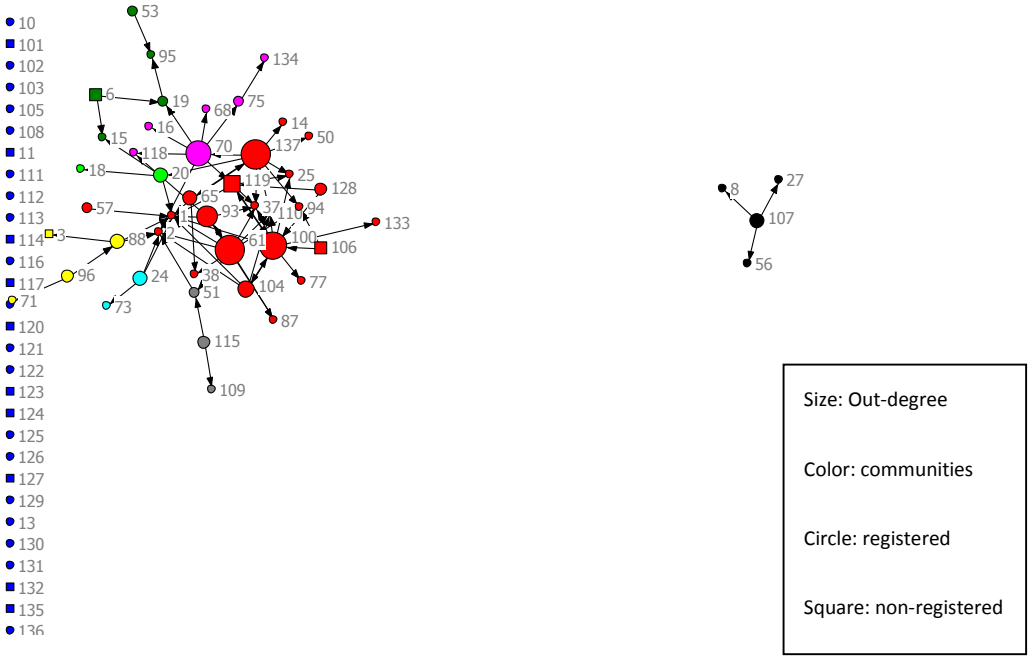


Figure 5.2.11. Pre-earthquake Collaboration Network Community Structure (Partition=8, Highest Q Modularity Value=0.391)

Aside from the isolated actors (colored in blue), the rest of the network can be divided into 8 community groupings. Note that four actors colored in black on the right hand side of the graph formed an "isolated tree" structure and had singled themselves out from the main network structure. The main connected part of the network was further divided into 7 communities. Also note that the state and the market domains were found to be in the community with the largest number of actors. In terms of building collaboration projects with the government agencies and the private enterprises, the role of several actors became critical by observing the connections among the communities. For example, actors #70, #20, #88, #24, and #51performed as "bridges" for the members in their own

community to build collaborative ties with actors either in the state or in the market domain. Others from their communities had to connect through these five actors to realize the opportunities for collaboration with actor #1 and actor #2.

This leads us to another structural characteristic regarding the main component for this network. To think of it in another way, actors #1 and #2 in turn also became "bridges" for members in the smaller communities to make collaborative connections with those resided inside the largest community. Note that with the exception of #70, the collaborative ties that the government sector and the business sector had with actors #88, #24, and #20 turned out to be the only channel through which their community members could access or possibly build future collaborative ties with the ones in the larger group colored in red. Recall that by research design, the state and the market aggregate were embedded into the civil society network without any outgoing ties. All the tie connections that they had were being named by those actors inside the civil society domain. Their role in making critical connections between communities at this time stage revealed their perceived significance in being project collaboration partners from the perspective of civil society actors before the earthquake. On the one hand, nonprofit groups and organizations did build up their own community within which they developed closer

collaboration ties among each other. On the other hand, they realized the importance of making long term attachment to the state and the business sectors.

The project collaboration community structure was being significantly altered shortly after the earthquake event. Figure 5.2.12 shows the community composition for this period. Visually observing the graph, we can see that the main component of the network became denser as more actors were engaged in the largest connected community for collaborative projects.

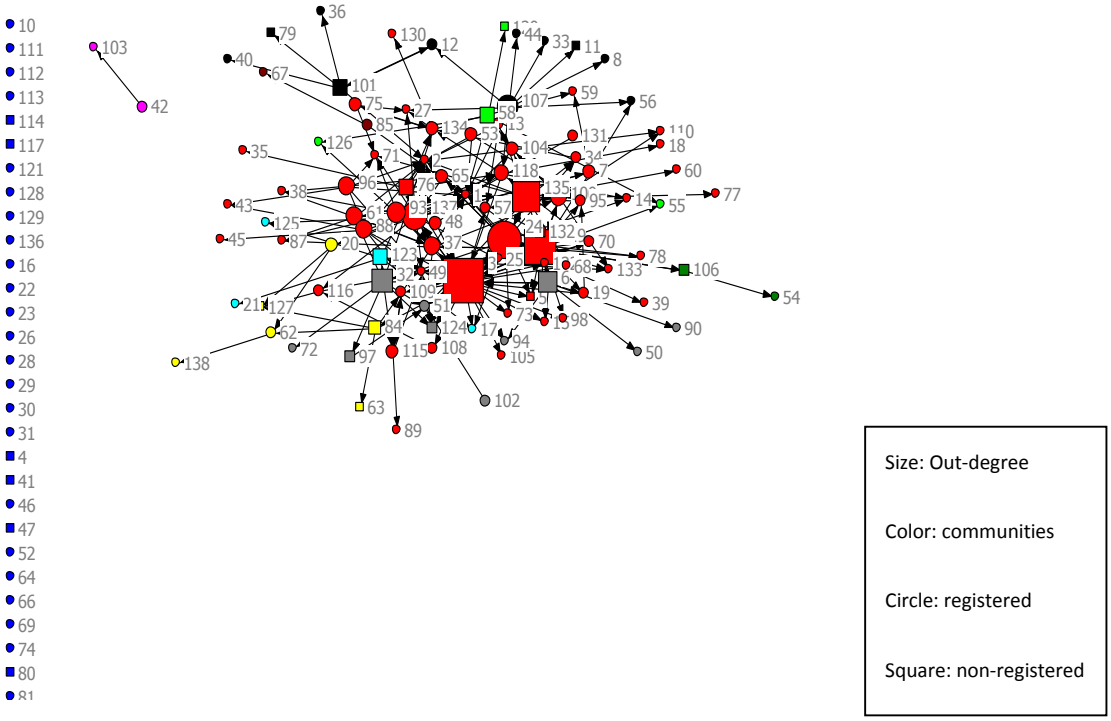


Figure 5.2.12. Emergency Response Collaboration Network Community Structure (Partition=10, Highest Q Modularity Value=0.247)

Based on the Girvan-Neman detection method, there were 10 communities. The community colored in red was the one with the most members and was certainly composed of more actors than the largest community found in the previous period. One "isolated tree" structure was still disjointed from the main connected part of the network, and it was found between actor #103 and #42. The rest of the smaller communities were the ones with significantly less collaborating members inside them. There were still a number of actors performing the function of "bridges" that connected those others whom would otherwise become isolates. For example, actors #101, #107, #62, and #106 were all found to play the role of mediating the "hangers[127]" that were attached to them on the periphery to the main component of the connected network. The appearances of these kinds of structures showed that the collaborative actions still had certain degree of disintegrated-ness.

However, one noticeable structural change during this period of time was the decreasing number of civil society actors who performed as "bridges" linking possible collaboration ties with the state and the market sectors. Note that the two aggregate domains became further embedded into the largest community. Actors from other smaller

[127] "Hangers" are formally defined as "points that are connected to a member of a cyclic component, but which do not themselves lie on a cycle. Hangers simply 'hang' on to a cyclic component" (Scott, 2001, p106).

communities that could reach the government agencies or the private enterprises for collaboration ties also developed various alternative "routes" with those that are in the largest community. What this meant from a structural change point of view was a pattern of dynamics that civil society actors created for further attachment both "horizontally" and "vertically" to others in the network. By "horizontally", I mean more collaborative initiatives were being made among civil society actors themselves. The impact of this on the structure was an increase in interconnectedness in terms of the availability of channels for collaborative projects developments through indirect ties. By "vertically", I mean that the actions were being further concentrated towards higher out-degrees, or the emergence of those who were increasingly active in reaching out to others for collaboration at this period of time. Furthermore, the state and the market domains were no longer perceived as the only "bridges" for the smaller community members to connect to the rest of the others. Civil society actors started to actively look to others who took actions in similar activity areas for collaboration. While actor #1 and #2 continued to play a significant part in the life of civil society actors when examining the intensity of two aggregates' in-degree, since the earthquake event, their existence were recognized as only part of the collaborative functioning for civil society actors. The roles played by others in the civil society domain were being recognized and activated at this stage of time.

This type of structuration process continued during the long term recovery stage. One of the marked differences when comparing this period to the previous emergency response stage was the disappearance of the disjointed isolated tree structure formed between actor #103 and #42. It is apparent from figure 5.2.13, that both actors were drawn to become attached to the main component of the collaboration network. Actor #103 is a member of a smaller sized community during the long term recovery, while actor #42 initiated a collaboration tie with actor #51 and both of whom belonged to the largest community being detected.

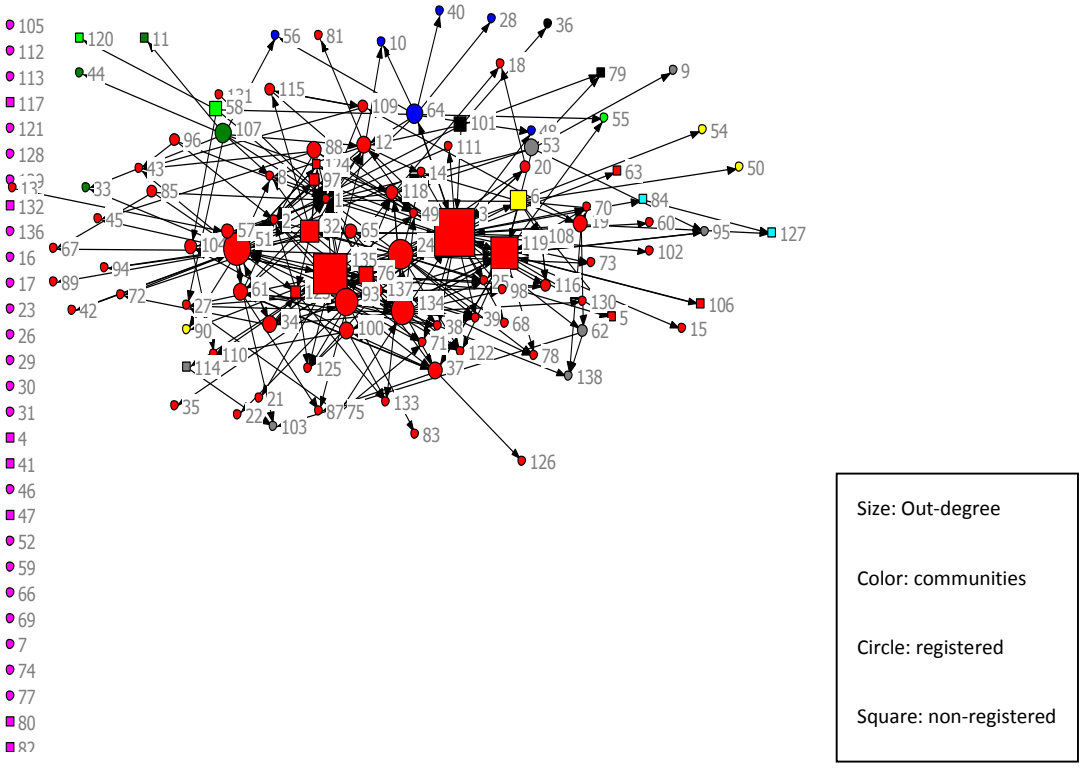


Figure 5.2.13. Long-term Recovery Collaboration Network Community Structure (Partition=9, Highest Q Modularity Value=0.130)

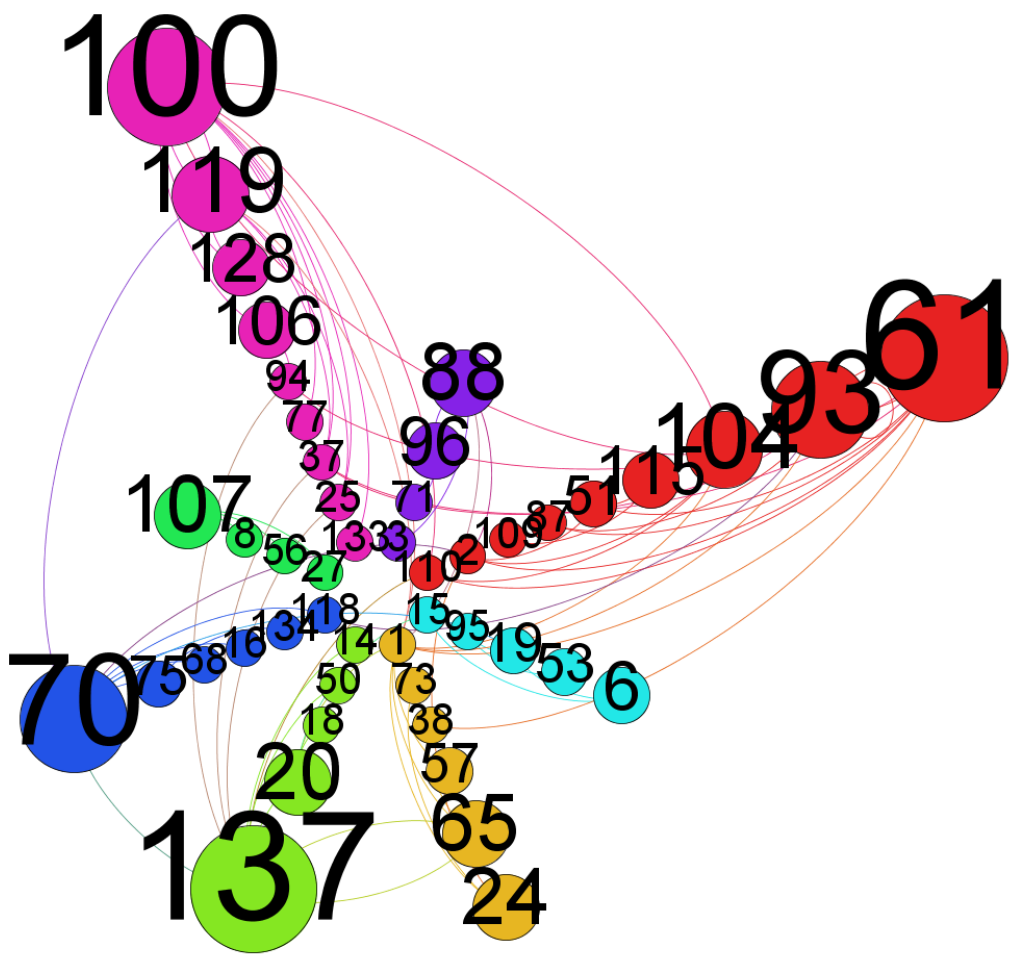
Looking closely at the attachment structure of all other smaller communities to the largest community grouping, notwithstanding that there were still some "hangers" on the periphery of the structure, one can find that there were significantly less of those who performed bridge roles when compared to those existed before the earthquake and the shortly after the disaster. What this means is that actors were being further drawn into the main component of the network and their collaboration ties also became diversified across a variety of pathways.

From looking at the changes in component structures and the community groupings inside the collaboration networks over time, a few points can be summarized regarding the tendency towards institutionalization process after the disaster. First of all, the general collaboration structure went from actors being loosely attached with a sense of disintegration to one that attracted attachment with tendencies to integration as a whole. Secondly, actors were being increasingly drawn to have collaborations with those inside the larger community. This process left the boundaries among the different communities less distinctive over time. What this signifies is that after the earthquake, the pattern of the collaboration structuration was altered from one that showed more segregation among community groupings to one that promoted cohesiveness and conviviality among actors. Such a tendency also built itself up in intensity so as to sustain

the similar patterns of change in the longer term. Thirdly, the attitude and behavior of civil society actors went from one that was more focused on building particular partnerships with a specific set of actors to one that valued diversity, especially in the context of cross-sector collaborations. In other words, the pursuit of commitment was no longer characterized by "single-mindedness" and "boundary-protection". Rather, with a sense of "open-mindedness", civil society actors were able to approach project collaboration in such a way that enhanced their ability to connect further with more others across the entire network. What this revealed about the character of civil society over the long term was that its action incorporated a "vision" of integration instead of "near-sightedness" in its way of perceiving and acting.

This kind of embrasiveness and open-mindedness toward integration can be further represented by the community structural changes detected by the alternative detection method (Blondel et al., 2008). Note that the initial integration for the collaborative structure can be illustrated by a decrease in the number of communities but with an expansion of members inside each community found in the connected network immediately after the earthquake (see figure 5.2.15 and figure 5.2.16). With the emergence of new civil society actors, the collaboration behavior adjusted in such a way that actors were being further drawn into the different kinds of commitment-oriented

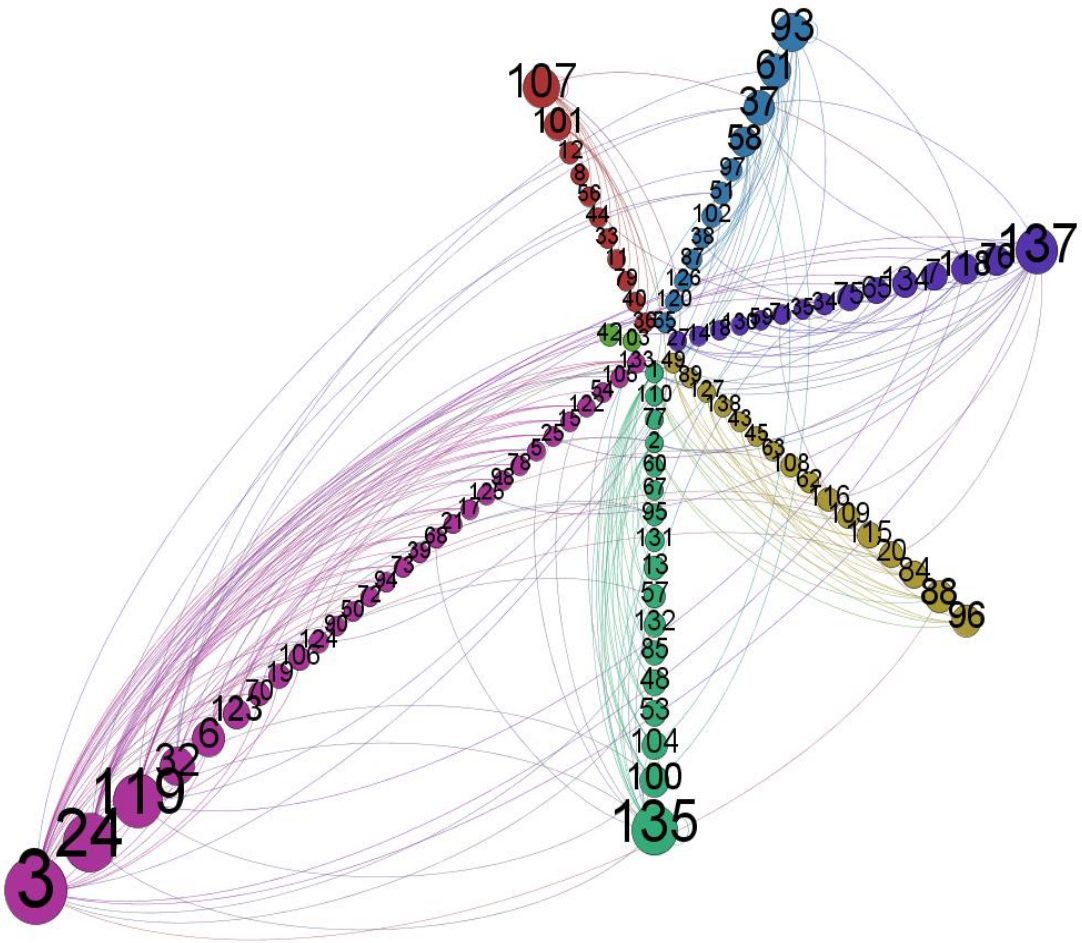
activities over the long term. Therefore, over time, one can observe a gradual expansion in the diversification of the number of collaborative communities in the connected network (see figure 5.2.16). The "vision" for integration on the part of civil society actors was activated by their search for a variety of attachment styles.



Size: Out-degree; Color: Communities

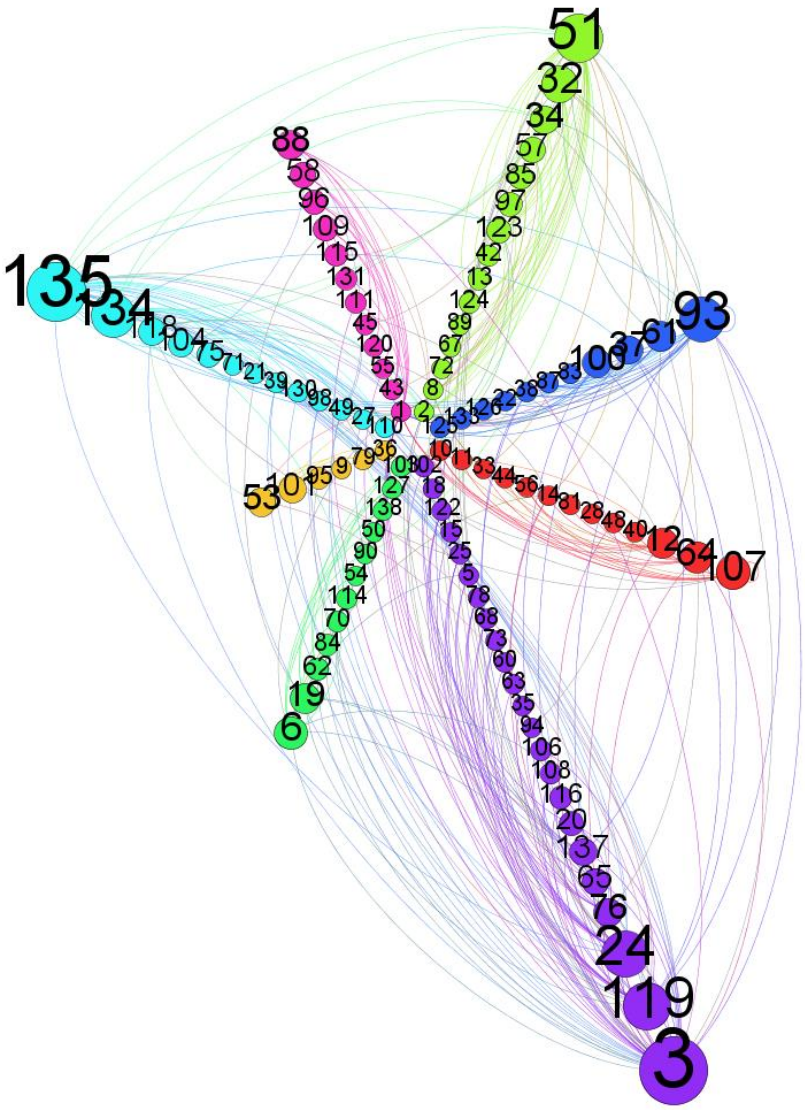
Figure 5.2.14. Collaboration Network Pre-earthquake[128] Community Structure (Blondel et al., 2008)

[128] Please see Figure 5.2.2*A* for the original network graph in Appendix 5.2.2.



Size: Out-degree; Color: Communities

Figure 5.2.15. Collaboration Network Emergency Response Community Structure (Blondel et al., 2008)



Size: Out-degree; Color: Communities

Figure 5.2.16. Collaboration Network Recovery[129] Community Structure (Blondel et al., 2008)

[129] Please see Figure 5.2.2*C* for the original network graph in Appendix 5.2.2.

Bottom-up Approach: Structural Transformation of Civil Society

Overview

The process of identifying "maximal and complete" sub-structures or "cliques" for the collaboration networks turned out to be more complicated than that for the communication network structure. Recall that for a directed network taking into consideration of who sends and receives a tie, the concept of clique requires the actors inside such an environment to be not only directly connected to all others but also each of the connection to be reciprocated. The cliques that were found in the communication and collaboration networks were therefore "strong cliques". In the previous chapter, I found that the clique analysis revealed a strong tendency for civil society actors to build such "tightly-knit-together" sub-groups for communication and information exchange purposes. However, such strong directly reciprocated connections were rare for project collaboration. The initial analysis on the collaboration networks did not identify any strong cliques for the period before the earthquake. In addition, only one clique composed of three members was being found for the two time periods after the earthquake. This could have two characteristic implications for this structural environment at the most stringent definition level of cliques. First, although actors could

be engaged in close communication relationships with a set of others, but when it came to building project collaborations, the relationships were not only much more loose but also with less tendency for "exclusivity" behavior such as one determined inside strong cliques. Secondly, the nomination of one collaboration tie from an actor towards the other was less likely being reciprocated. On the one hand, the inclusion of actors who were non-responsive to the survey and the generalization of aggregate state and market actors had contributed to the inherent non-reciprocation of ties. On the other hand, the definition of "collaboration" could vary based on actors' interpretations of the circumstances that could be counted towards such activities. Regarding the former circumstance, the network analysis offers an alternative method to take the non-responsiveness and aggregation features into consideration. And it is called "n-clan" analysis. For the following sections, I will utilize this concept to discuss the sub-structural characteristics of the collaboration networks. Regarding the second circumstance, it can be interpreted as a sign that the concept of "collaboration" and its functions might be derived from different contexts, particularly when taking into consideration individual perceptions. And this aspect of consideration is a limitation of this research and is worthy of further exploration in future research studies.

In order to identify the development of *n-clan* structures in the collaboration networks, it is necessary to first provide a conceptual clarification of the origin of "n-clan" in network analysis. Recall that use of the concept of cliques as maximal complete sub-structures put a rather stringent requirement on finding closely "attached-together" groups for collaboration structure environment. The finding from the clique analysis revealed that it is uncommon for actors to engage in such tightly-knit-together collaborative projects both before and after the earthquake. However, this does not mean that actors were not involved in closer relationships if the restrictions can be slightly relaxed to a certain degree. The detection of "n-clique" is one way to do so. When n=2, the method will identify sub-groups by including those "friends of friends" indirect contacts through a common neighbor rather than strictly focusing on the direct connections. However, one drawback for such n-clique analysis was the possibility of including an actor that played a role in connecting n-clique members but might not have ties to all clique members, and thus not part of the clique itself (Scott, 2001). The result of using this method was that one might end up including too many distant "friends" of clique members into each n-clique. One way to focus entirely on the clique members alone was to restrict the diameter of the cliques found to be no greater than *n*. For example, if I identify 2-clan sub-groups, this means I am only examining members no

further than 2 path steps away from another and all connections would have to be reached by way of another member inside the *n*-clique. The detection of n-clan, therefore, would yield tighter bottom-up sub-groups by paying closer attention to those who were members of the n-clique. Another point worth noticing was that the n-clan detection method ignored the directions of the collaboration ties. In terms of interpreting the results given this condition, as long as one actor made a nomination of project collaboration towards another actor, the tie between the pair of actors would be counted in n-clan analysis. In other words, the variation in understanding and defining what it means to participate in collaboration among pairs of actors are being ignored in this study context.

Two-clan Analysis

To implement the n-clan analysis in this study, I adopted a detection method by restricting n=2. This means that for each tightly knit together sub-group being identified, all the connections occurred among members inside the clan would be no more than at distance 2 paths. Compared to the maximal complete sub-structure identified as cliques for the communication network, this 2-clan approach allowed those who were indirectly connected to the focal actor by way of an intermediary actor to be part of the sub-group.

In other words, it is possible for actors to hear about possible project collaboration opportunities through a mutual acquaintance who already has engaged in collaboration activities with the focal actor. The further away or the more steps of pathways that collaboration ties were being built from some members, the more difficult it was to interpret the formation process of collaboration ties for those part of a closely attached-together group. Therefore, this study restricts the number of intermediary connections to be at the level one so as to observe the behavior of actors within a more tightly defined diameter boundary.

Pre-Earthquake Stage

For the period before the earthquake, a total of 18 2-clans were found in the collaboration network[130]. The minimum number of members in a 2-clan was 3 and the maximum was 11. Observing the member composition across the clans, the state actor #1 appears to be an important collaboration partners from clans 1 to 7. Among these seven 2-clans, three were represented by both the state and the market actors, in addition to the participation of other civil society actors in the same sub-group. This could be understood

[130] Please see Appendix 5.2.3*E1* for UCINET output.

as one primary piece of evidence showing signs of inter-sector collaboration involving a limited number of civil society actors. This also demonstrated that the participation of civil society actors in project collaborations was not completely absent from even before the disaster in the Chinese case.

Examining through the "hierarchical clustering of overlap matrix[131]" at the actor level during the pre-earthquake stage, one can see that at the highest clustering level, actor #110 and #37 joined together as particularly close to each other in terms of sharing common membership together. As the stringency of clustering becomes more relaxed at the next level, actor #1 and #2 were actually attached together in terms of incidences of sharing clan membership. There are a couple of implications that can be said regarding this particular outcome. Recall that the grouping status of the state and market aggregates were derived from the collaboration linkages each of them had with civil society actors. In other words, by way of the nominations from civil society actors on their perceived conception of collaboration activities, the government agencies and the private enterprises could indeed be categorized together in terms of being close in sharing collaborative projects together. Not only so, from the perspective of civil society actors, the activities of those inside the two domains also showed signs of exclusivity. At the

[131] Please see Appendix 5.2.3*E2* for UCINET output.

clustering level of 3.0, one can see that the joining sequence between actor #1 and #2 was separated from the attachment among other civil society actors. This kind of grouping behavior was not an ideal one for developing a type of social structure that could promote commitment-oriented relationships such as inter-sector project collaborations. In this study, such a tendency for exclusive attachment between the state and the market domains was being captured from the perspective of actors inside the civil society domain. This type of perceived attachment for the two aggregate actors turned out to be persistent when the clustering stringency was being relaxed all the way until level 1.360. Before then, the structure can be characterized by the separation of a number of different attachment groups in terms of clan membership sharing. In summary, I use figure 5.2.17 to illustrate the state of the sustenance structure in terms of the dynamics among civil society, the state, and the market domains for the pre-earthquake period.

Stage 1

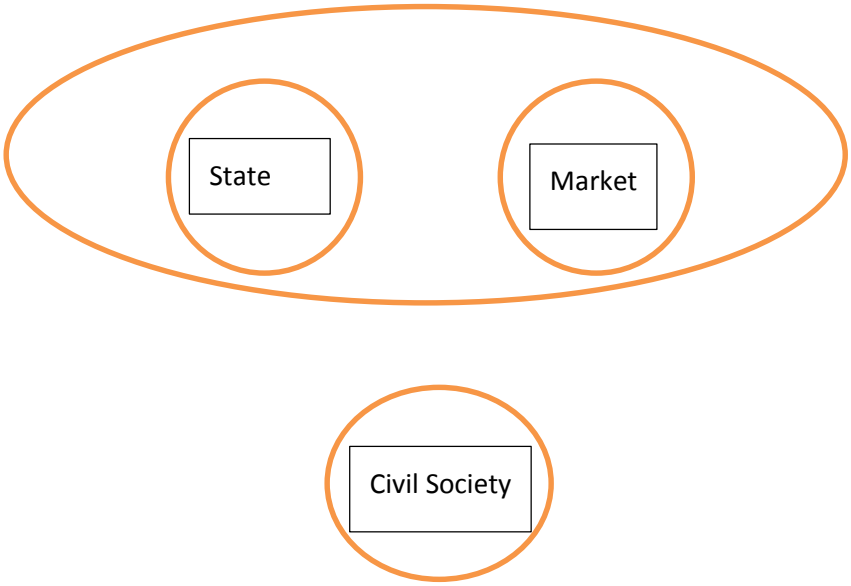


Figure 5.2.17. Pre-earthquake Cross-sector Structure (Collaboration Network Dynamics)

Emergency Response

Shortly after the disaster, the number of 2-clans went up dramatically to a total of 86. Just as the trend in clique development for communication networks, actors at this period of time were also inclined to expand collaboration ties not only in terms of the variety of others across the network but also tended to develop close bonding relationships with more actors inside their own clan-circle. Like the structural change inside the communication network shortly after the crisis, the change inside the

collaboration structure was characterized by both breadth and depth of sub-group relationship-building. The maximum number of actors in a 2-clan increased to 29 members. One can also observe that the state sector was being heavily represented in most of the clans. The actor-by-actor membership sharing matrix identified that the state was a member of 64 out of a total number of 86 2-clans[132]. From the "hierarchical clustering over-lapping matrix[133]" at the actor level, the findings showed a major structural change in how the civil society actors, the state, and the market were being intertwined together during the emergency response period. At the most stringent clustering level (49.000), the newly emerged social group actor #3 and the state actor #1 were first joined together as sharing the most clan memberships. This piece of evidence represented a significant structural break-through in terms of how the civil society and the state domain formulated collaborative bonding with each other. The two actors were closely attached by participating in 49 2-clans together, which was the most among all other pairs of actors in the network. The newly established informal status of actor #3 and its attachment to the state sector signified the emergence of a bonding process within which the state domain started to become a critical collaborator penetrating the inner-

[132] Please see Appendix 5.2.3*F1* for sample UCINET output.

[133] Please see Appendix 5.2.3*F2* for sample UCINET output.

most circles at the grassroots level of the civil society domain. As the clustering level relaxes, it can be found that the state actor was gradually being closely attached to a variety of other actors who resided inside the civil society domain. One key difference of the collaboration structure at this period of time was the separation of the attachment between the state and the market domain in terms of their close ties with the civil society. The results showed that while the state actor was tightly knit together with a larger group of civil society actors as the clustering stringency level was being relaxed, the market actor seemed to be tightly collaborating with a few other civil society actors that altogether, their closeness in grouping was separated from the state-civil society grouping until the clustering stringency level was lowered to 4.071. Therefore, one can summarize that the dynamics of collaboration structural change went from a perceived bondage between the state and the market domain towards a process that activated the bond of civil society actors towards both the state and market separately (shown in figure 5.2.18 below).

Stage 2

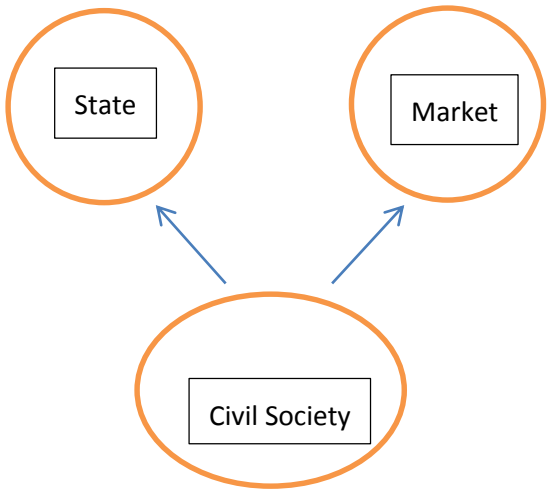


Figure 5.2.18. Emergency Response Cross-sector Structural Transformation (Collaboration Network Dynamics)

Long-term Recovery

Moving on to examine the collaboration structure of long term recovery stage, the first characteristic that stood out was the continuing expansion of the number of 2-clans groupings, showing the tendency for civil society actors to make further commitment for institutionalizing collaboration connections among themselves as well as towards the state and market actors. The total number of 2-clans went up from 86 during the emergency response period to 109 during the recovery stage. In addition, the sheer

number of actors inside each one of the 2-clans increased dramatically as compared to the previous period. The number of membership participation of the state actor increased from 64 clans to 93 clans. This demonstrated that from the civil society actors' perspective, the government agencies maintained its sub-group membership participation commitment and became increasingly engaged in establishing long-term collaborative relationships with a wide variety of civil society actors. The joint membership for the state and the market sector almost doubled from 23 2-clans during emergency response to 49 2-clans during recovery. The two actors only shared membership in 3 2-clans before the earthquake. Whether the perceived actions of the state and the market were joined together in terms of project collaboration activities among civil society actors at the recovery stage was identified from the "hierarchical clustering over-lapping matrix"[134]. The outcome showed that civil society actor #24 and #135 first joined together as sharing the most membership together. As the clustering level was being relaxed, the state actor first joined the others as being close in terms of sharing membership together in collaboration projects. The attachment of market sector towards the grouping behavior of the state and the civil society actors came later when the clustering level is being further relaxed. The main difference for the long term recovery period was that the joining

[134] Please see 5.2.3*G2* for sample UCINET output.

sequence of attachment finally brought the state, the market, and the actors inside the civil society domain together in terms of being closely tied together when it comes to common clan membership-sharing activities. The clustering divide between the state and the market actor was not as sharp as the period immediately after the disaster.

There are two points that can be implied from these pieces of evidences. One is that the collaboration structural change resulted from the emergency response after a crisis had indeed been transformed into one that focuses on in-depth relationship-building among the civil society actors and the state as well as the market sectors. The other point that is worth making inferring from the 2-clan results is that the recovery stage marked an initial integration of close attachments among the three domains of action, graphically shown in figure 5.2.19 below.

Stage 3

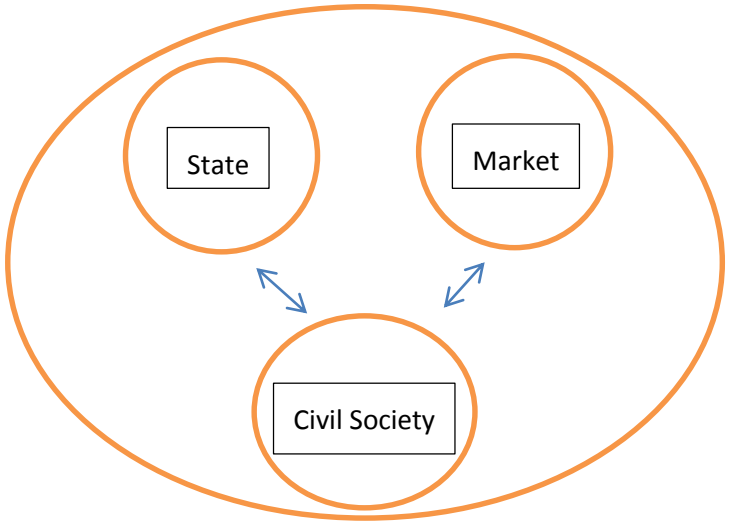


Figure 5.2.19. Recovery Cross-sector Structural Transformation (Collaboration Network Dynamics)

One unique characteristic regarding the structural change process depicted from figures 5.2.17, 5.2.18, and 5.2.19 was the active participation of civil society actors in collaborative projects towards the state and the market sectors shortly after the disaster. In other words, the role of civil society was an active one in promoting a process of structural transformation among the three domains.

Lastly, I would like to emphasize the bottom-up sub-group formation examined in this section. From the clique analysis conducted on the collaboration network earlier, recall that no cliques were found for the pre-earthquake period. However, for the short-term and long term recovery periods after the disaster, three civil society actors were found to be consistently engaged in close collaboration relationships such as one inside a

clique. They were actors #3, #24, and #119. Their collaboration ties not only met the most stringent requirements as a maximal and complete, the connections were also being mutually reciprocated when taking directions of ties into account. Therefore, the three of them emerged as a "strong clique" together during the emergency stage after the disaster and were able to carry the collaboration ties forward into the longer term recovery stage. Briefly examining the attribute characteristics of the three actors, #3 and #24 were locally grown grassroots working inside the Sichuan Province. Although actor #119 originally entered into mainland China as a Hong Kong based nonprofit organization, it had significant amount of experience in participating in local community affairs since before the earthquake.

Chapter 6

The Autopoietic Civil Society: Rules of Network

Longitudinal Modeling for Network Dynamics

Motivation

In the previous chapters, the examination focused on understanding the macro and micro structural characteristics of how actors build their communication and collaboration networks over time. Each of the six structural environments (three communication networks and three collaboration networks) was investigated separately to look at how actors were connected and embedded within their local and global network environment. Descriptively speaking, the analysis demonstrated some of the primary evidences in understanding the formation, persistence, and the sustenance of the action structures for both communication and collaboration network environments before and after the 2008 Wenchuan earthquake. To put it in another way, it was an exploration of how the resiliency of an independent civil society structure was built after a catastrophic crisis in China.

However, when facing the unique nature exemplified by each one of the network structures and trying to synthesize their change patterns over time, the descriptive tools

essentially deal with the structuration processes in a static state of being. The examination of the dynamics of structural changes is conducted for the following reasons[135]. One is to find out if there were indeed "rules" that would govern the network behavior over the specified three periods of time. In the context of current research for example, these governing "rules" would include whether the institutional status in terms of registration would have an effect on the evolution of communication and collaboration behavior, whether there were structural tendencies that would affect the specific formation patterns of the communication and collaboration network development, and most importantly, whether there was a tendency for the communication structures to co-evolve with the collaboration structures. Discovering and specifying these rules is an essential step in making both theoretical and policy contributions for societies to deal with catastrophic changes that alter the social relationship structures within which human decisions are being made on a daily basis.

Another reason for conducting this modeling analysis was to specifically incorporate the time factor into a setting that investigates an actor-oriented social change process. Theories of civil society and institutions have all paid attention to how social changes came into being from an actor-attribute perspective, but rarely do investigators

[135] Also see the results from Homophily Tests in Appendix 6.1.

look at the picture from a relational point of view, which is essentially to develop a coherent story that allows the interaction of agency decision-making and social structural change being revealed over time. I will further develop these lines of arguments throughout the discussions in the various sections of this chapter. Let's start by illustrating some of the basic characteristics of the model that was being used in this research.

In this section, I propose a longitudinal network modeling framework to look at social group and NGO activities over time in the context of Chinese disaster recovery. Two types of stochastic actor-oriented models were being proposed. One was for communication exchange network and the other was for collaboration network.

Research Setting and Design

The Stochastic Actor-Based Models (SAB Models)

Dynamic social networks consist of ties that change over time. If I want to investigate the rules governing the network evolution, there are a set of basic assumptions when modeling such dynamics. The following two factors are the foundational assumptions made in this respect: a) Network ties are not treated as *events*, but as *states* with a tendency to endure over time. Social relations such as the ones studied here

(communication and collaboration) satisfy this requirement of endurance once first established. b) It is also further assumed that changing networks can be interpreted as an approximate outcome of a Markov process. This means that "for any point in time, the current state of the network determines probabilistically its further evolution" (Snijders et al. 2010). Snijders, Van de Bunt, and Steglich (2010) depicted six general assumptions and I will discuss each of them in accordance with the theoretical and methodological approach chosen in my research study.

Assumption #1:
"The underlying time parameter t is continuous. The parameter estimation procedure, however, assumes that the network is observed only at two or more discrete points in time. The observations can also be referred to as 'network panel waves'." (5)

This study had three 'waves' each representing the time stage: before the earthquake, emergency response, and recovery. One advantage of the continuous-time assumption is that it allows for complex relationships to be formed from micro-steps rather than "out-of-nothing". In other words, it "represents dependencies between network ties as the result of processes where one tie is formed as a reaction to the existence of other ties" (5). While appealing in the sense that the micro-formation processes were allowed to be traced and represented, it also posed some challenges when

applied to the current research context. One issue was its lack of capacity in explaining the factors that prompted the formation of a tie between two actors in the first place. In other words, with the significant patterns of change in network structures immediately after the earthquake, the structural dependencies between the network before the disaster and the emergency response period would be challenging to model precisely. This factor was further discussed when taking into account of the "time heterogeneity" issue into consideration to enhance the prediction power of the model in this respect. The point that I wanted to emphasis here is that a qualitative aspect of investigation would make contribution to discover the motivational side of the factors that drove the initial formation of connections among civil society actors as the result of the earthquake event.

Assumption #2:
"The changing network is the outcome of a Markov process, i.e., that for any point in time, the current state of the network determines probabilistically its further evolution, and there are no additional effects of the earlier past. The total network structure is the social context that influences the probabilities of its own change." (6)

On the one hand, taking the network structure at a particular point of time as a social context that influences the decision-making of actors is in line with the network approach of this study. The relational context of the social structure that actions were

made was an important lens through which I looked at my data. On the other hand, this would again generate issues in understanding the potential for the model development in understanding a social process with drastic changes between two waves. Similar to the first assumption, the challenge here again lies in the particular characteristic of this disaster recovery dataset with abrupt changes in between time wave 1 and wave 2. However, for dataset with more than two panel waves, it also possible to propose improved models with less restrictive assumptions regarding this time dependence (Snijder et al., 2010). This study thus built up a preliminary foundation in venturing into the discovery of more sophisticated models specifically designed for civil society actions in disaster recovery contexts.

Assumption #3:
"The actors control their outgoing ties. This means not that actors can change their outgoing ties at will, but that changes in ties are made by the actors who send the tie, on the basis of their and others' attributes, their position in the network, and their perceptions about the rest of the network." (6)

This assumption directly speaks to the theoretical foundation that I chose to guide this research study. The "agency freedom" (Sen, 1999) being enacted inside the civil society domain rests upon the proactivity of actors, and it also takes into consideration of

the relational environments into their decision-making processes. The duality of purpose and constraints is being implemented explicitly, and this made an appealing feature of SAB modeling to be applicable to research taking hold of similar theoretical orientations.

Assumption #4:
"At a given moment one probabilistically selected actor—'ego'—may get the opportunity to change one outgoing tie. No more than one tie can change at any moment. This implies that tie changes are not coordinated, and depend on each other only sequentially, via the changing configuration of the whole network." (7)

Within the context of this research, especially the time period between wave 1 and wave 2 was characterized by communication ties being initiated by actors voluntarily came together for response and recovery efforts in the disaster-impacted area. The abruptness of the crisis event, however, poses a challenge for the assumption regarding the sequential order of tie changes. I will come back to this point when going through data treatment procedures in the later sections. For now, it is important to point out that each focal actor, as an "ego", has an opportunity to make a change to its immediate network environment and also by way of the entire structure of the whole network. The emphasis is given to investigating the nature of self-organized relationships emerging from "ground up", thus the willingness factor of civil society actors.

The network change processes are further composed of two sub-stochastic-processes (Snijders et al. 2010):

*"The change opportunity process, modeling the **frequency of tie changes by actors**. The change rates may depend on the network positions of the actors (e.g., centrality) and on actor covariates (e.g., age and sex)."(7)*

*"The change determination process, modeling the **precise tie changes made when an actor has the opportunity to make a change**. The probabilities of tie changes may depend on the network positions, as well as covariates, of ego and the other actors ('alters') in the network." (7)*

These two modeling processes highlighted the active agency on the part of actors being capable of making stand-alone decisions, and "are not regarded as subservient to others' interests in any way" (7). This is precisely in accordance with the theoretical outlook of this chapter in that the Chinese civil society as a "standing-up" domain in its interactions with the forces of the state and the market.

I adopted the longitudinal SAB model perspective because it takes into account the dynamic nature of the networks under investigation[136]. From other parts of my qualitative studies regarding social group and NGO activities after the earthquake, the catastrophic event not only brought a set of latent altruistic and self-organizing values to the surface, the understanding of the network changes from these civil society actors was

[136] See Appendix 6.2A for further considerations.

nowhere near a static account. Making an implicit assumption that the networks at hand were in equilibrium would be going against the meaning how actors understood civil society in this research context. In this respect, longitudinal modeling became important to discover the rules and principles that govern social change.

The *SIENA* Methods in R Statistical System

"SIENA" ('Simulation Investigation for Empirical Network Analysis') is a software that specifically designed to estimate longitudinal network models. It is also implemented in the R statistical package and together they are often regarded as the "RSiena" statistical system. The following discussions are the analysis procedures through this application. The estimation processes mainly followed the program and documentation guidelines depicted through the Siena Manual (Snijders et al. 2008) and the R-scripts available from the Siena web-page (http://www.stats.ox.ac.uk/siena/). Adjustments were made according to the specificity of the current dataset.

Data Treatment Procedures

Missing data treatment

Originally, the survey was distributed to 136 social groups and NGOs with the original response rate was 46%. Missing actors, particularly in social network analysis, will have a large impact in analyzing longitudinal models. There were two types of concerns with this level of missing-ness. One was the theoretical concerns of sound model-building. The loss of information in terms of how groups and organizations connect to each other will create problems in fitting models to the data, and this can lead to difficulties in reaching good convergence when running the specified models. The parameter estimates as a result, might be biased (Huisman and Steglich, 2008). The other concern was related to technical implementations. The SIENA methods do allow for some amount of missing data on network variables, covariates, and dependent action variables. The missing data is treated as non-informative. When the percentage of missing data reaches more than 20% on any variable, getting good estimates may be doubtful (Ripley, Snijders, and Preciad 2012). In their simulation studies examining possible treatments of non-response in longitudinal networks, Huisman and Steglich (2008) concluded that a model-based approach within the actor-driven models is the best

method to adopt. In the SIENA framework, the authors recommended utilizing the built-in missing data treatment from the software itself, as compared to reducing the data into complete cases or imputing the networks into an "alien" structure.

Considering the nature of my data and the current available tools in treating the incompleteness of responses of longitudinal network analysis, I developed a three-stage data manipulation process to reduce the missing data effect so that the high level of non-responsiveness of the original survey will have less effect on further analysis.

QAP Correlation Analysis

The first stage involved examining whether there was correlation between communication and collaboration networks over the three periods of time. I used the QAP (Quadratic Assignment Procedures) correlation analysis[137] on the original data composed of 138 actors (136 civil society actors, one state aggregate actor and one market aggregate actor) to determine whether the probability of communication ties was related to the probability of collaboration ties. If the two types of networks were indeed correlated with each other, I would use the type of network that showed more inclusivity in relationship-building agency activities as the basis for narrowing down the dataset.

[137] The QAP correlation is implemented in UCINET.

The discussion revealed the findings by using the QAP correlation analysis. I examined the question: if there was a communication tie between two actors, was there likely to be a tie between them in project collaboration? From the descriptive analysis in the earlier chapters, I also found signs of co-evolution between the two types of structures. So another question to look into would be: if there was a collaboration tie between two actors, was there likely to be a tie between them in communication?

In addition to looking at the relationships between the two types of network structures, I also incorporated two of the actor attributes into the correlation investigation to examine their relationship with the communication and the collaboration networks. Thus, I developed three general hypotheses in relation to this part of the analysis:

Hypothesis #1: Information exchange and communication relations were positively correlated with project collaboration relations, and vice versa.

This hypothesis can be understood in two ways. On the one hand, when groups and organizations were engaged in communications and information sharing activities, they were more likely to get to know each other's work better and develop further trust. This kind of shared understanding would more likely lead to commitment-oriented project collaborations. On the other hand, if two actors had been collaborating on

projects, the experiences of having to make joint decisions over the duration of the project would provide unique opportunities for the engaged parties to develop closer ties with each other, and thus making it easier to communicate as well.

Hypothesis #2: Institutional status similarity was positively correlated with communication/collaboration relationships.

Here, the institutional similarity was examined through actors' registration status. If an organization was formally registered either with the Ministry of civil affairs or under the business category, would this institutional type in terms of formality make it easier and lead them in building more communication/collaboration partners?

Hypothesis #3: Geographic proximity of actors was positively correlated with communication/collaboration relationships.

In other words, if two actors both have field offices operating in Sichuan Province, their close proximity and understanding of the local culture would facilitate them building communication/collaboration ties.

Pre-earthquake stage (t1)

The following table 6.1.1 and table 6.1.2 showed the QAP correlation results for communication and collaboration networks, as well as their correlations with the registration status attribute during the period before the earthquake.

Table 6.1.1. Pre-earthquake Stage QAP Correlations/P-values (with Registration Attribute)

	Communication	collaboration	Registration Status
Communication	1.000/0.000	0.504/0.000	0.028/0.134
Collaboration	0.504/0.000	1.000/0.000	0.010/0.244
Registration Status	0.028/0.134	0.010/0.244	1.000/0.000

Table 6.1.2. Pre-earthquake Stage QAP correlations/P-values (with Geographic Location Attribute)

	Communication	collaboration	Location
Communication	1.000/0.000	0.504/0.000	0.011/0.295
Collaboration	0.504/0.000	1.000/0.000	-0.003/0.468
Location	0.011/0.295	-0.003/0.468	1.000/0.000

First of all, the tables demonstrated that there was certain degree of correlation between the communication ties and collaboration ties at the 0.504 level, and the p value

for this correlation is 0.000. At a typical 0.05 level, this correlation is significant (0.000<0.05). This means that before the earthquake, if there was an existence of a communication relationship between two actors, it was indeed more likely that it would facilitate collaboration connections. On the other side, if the two actors were already engaged in collaboration ties, it was more likely that the two would be open to communication and information exchange as well. Examining the correlation results related to registration status and location, the findings showed that none of the correlation measures were significant at the 0.05 level. This implied that whether an actor was a registered organization or an unregistered social group would not be making the formation of either communication and collaboration ties more likely. This was also the case for the location factor. Whether the two actors were operating in geographic proximity was not correlated with the possibility that the two building up more communication or collaboration ties.

Emergency response stage (t2)

Immediately after the earthquake, the level of correlation between communication and collaboration experienced a slight decrease from 0.504 to 0.416 (see table 6.2.1 and 6.2.2).

Table 6.2.1. Emergency Response Stage QAP correlations/P-values (with Registration Attribute)

	Communication	collaboration	Registration Status
Communication	1.000/0.000	0.416/0.000	-0.000/0.536
Collaboration	0.416/0.000	1.000/0.000	-0.006/0.416
Registration Status	-0.000/0.536	-0.006/0.416	1.000/0.000

Table 6.2.2. Emergency Response QAP correlations/P-values (with Geographic Location Attribute)

	Communication	collaboration	Location
Communication	1.000/0.000	0.416/0.000	0.002/0.447
Collaboration	0.416/0.000	1.000/0.000	-0.015/0.243
Location	0.002/0.447	-0.015/0.243	1.000/0.000

This measure was significant at the 0.05 level. This piece of evidence implied that the happening of the disaster did not alter the existence of a positive correlation between communication and collaboration connections among actors. When two actors were

actively engaged in communication activities, it was more likely that they would be participating in joint project collaborations, and vice versa. The consistency of the correlation between the two types of the networks before and after the earthquake was one thing, there was also a sense of uniqueness regarding this situation. The fact that the correlation between communication and collaboration networks remained to be strongly significant, especially after such a catastrophic disaster, can be developed as one of the primary indicators that revealed the emerging resilient nature of the Chinese civil society domain. After such a tragic earthquake, not only the communication and collaboration connections did not break down, they were being maintained through the active agency of civil society actors and the existence of one also showed signs of kept enhancing the existence of the other. The capability of a society in developing "resilience" did not just depend on its ability to restore to the original state of being before the disaster incidence. The results of this analysis demonstrated that such capability to be "resilient" also depended on the social actors' ability to relate to each other at the time of a crisis as well as in enhancing the different types of the relationships being built. In the Chinese context, such a nature of "resilience" was being clearly evidenced by the persistence of a strong willingness of civil society actors to maintain communication and engage in project collaboration while having to face the tragic consequences caused by the earthquake.

Therefore, "resilience" can also be understood as the social actors' capability to strengthen and renew the social structural environments which in turn influence their decision-making and behaviors. The key driving factor for realizing this kind of resilience, I would argue, is the awareness of agency freedom being carried out by the actors themselves. It is essentially an actor-oriented approach to looking at the conceptual formation of "resilience".

The other part of this section of the results also demonstrated that neither the registration nor the location factors were correlated with the likelihood of communication and collaboration ties. This was another corroborating piece of evidence that showed the structural transition towards integrated cohesiveness in communication and collaboration networks. First of all, whether an actor was registered as a formal organization might not make a communication and collaboration relationship more likely. This can be interpreted as sign of civil society actors being less inclined to intentionally separating themselves based on their institutional similarity or location proximity with others. For the emergency response period, this can be understood as a positive "virtue" of how civil society reacted to disasters. It is because a cohesive and coordinated response would not be possible if actors cared about grouping each other based on these two attributes and became exclusive in terms of "picking out" the ones of some pre-determined preferences.

The communication and information sharing ties would experience more "disruptions" through pathways. The evidences at hand, however, showed a completely different picture from this scenario. There were encouraging signs demonstrating that the communication and collaboration network connections were less likely to be interrupted by actor attribute factors such as registration status or location proximity.

Recovery stage (t3)

There was a slight increase in the correlation measure between communication and collaboration network during the long term recovery stage (see tables 6.3.1 and 6.3.2).

Table 6.3.1. Recovery Stage QAP correlations/P-values (with Registration Attribute)

	Communication	collaboration	Registration Status
Communication	1.000/0.000	0.435/0.000	0.009/0.383
Collaboration	0.435/0.000	1.000/0.000	0.010/0.310
Registration Status	0.009/0.383	0.010/0.310	1.000/0.000

Table 6.3.2. Recovery Stage QAP correlations/P-values (with Geographic Location Attribute)

	Communication	Collaboration	Location
Communication	1.000/0.000	0.416/0.000	0.006/0.410
Collaboration	0.416/0.000	1.000/0.000	-0.014/0.309
Location	0.006/0.410	-0.014/0.309	1.000/0.000

Again, the p value of the measure was significant at the 0.05 level. This means that over time, the "bond" being built between communication and collaboration became stronger. Two actors having either type of connections would be even more likely to be engaged in the other type of activity. In other words, the strength of "mutual enhancement" characteristic of the civil society resilient structures was being stabilized over the long term. The implication of this piece of finding is that the time factor did not present as an interference that causes the elapse of the close correlation between communication and collaboration networks. Rather, the strength of the correlation withstood the test of time and was made even stronger than the emergency response period. This further demonstrated the willingness to commit on the civil society actors' side.

The institutional similarity and the location proximity factors remained to be insignificant in their correlations with the communication and collaboration networks. Up to this point, we can safely say that for the development of the two types of the networks before and after the earthquake event, it was less likely for them to be correlated with an

actor's registration status and geographic location. This means that the structural transformations of the two networks over the three periods of time were less likely to be related to the actor attributes. On the one hand, this implies that civil society actors are not likely to perceive institutional similarity and location proximity as determining factors when they make communication and collaboration decisions towards others. On the other hand, some other structural factors could be at work in "stimulating" the transformations of the two networks over time. I will delve into this part of the analysis in the modeling sections.

In summary, the QAP analysis showed that the communication and collaboration networks were indeed positively correlated with each other both before and after the earthquake. Going back to the original purpose in this investigation, which was to minimize the missing-ness of the original network data, these results allowed me to further look at the core-periphery structures in order to select the one with the most inclusive network connections.

Core-periphery Analysis[138]

The second step of the missing data treatment procedure involved conducting a core-periphery analysis to the actor-by actor data matrices of the communication network in UCINET. This analysis identified two sets of actors. One set was composed of actors (core) with high density of ties among themselves while the other set was the set of actors (periphery) with low density of ties among themselves. The denser the ties among the actors meant that the members in the core interact with many more others in the same category as compared to those in the periphery. Eventually, actors in the core were able to "coordinate" their actions while those in the periphery were not. Since one of the main research questions this study intended to answer was how groups and organizations communicate and collaborate over time after a significant event, the density of ties that represented both naming and being named by other actors in the networks was an important factor to consider. Collapsing the original number of actors to only those in the core category thus allows this study to further focus on those with relatively high level of coordinated activities.

[138] Please refer to Appendix 6.6 (*A-C*) for samples of UCINET communication network core-periphery output results for three time periods.

First of all, I conducted core-periphery analysis for all three periods of the communication network. Then, actors that appeared as core members in each one of the period were combined together into a single group of actors. Observing the core class membership Table 6.4 for the communication networks over the three periods of time, there were a total of 70 actors appeared in the core of communication networks[139]. Then, I conducted a core-periphery analysis for the collaboration network. The core members for all the three time periods are shown in table 6.5.

Table 6.4. Communication Network-Core Class Membership

Waves	Actor Identifier
t1	1 100 104 106 108 110 115 118 119 134 137 14 19 20 24 25 27 37 38 50 51 57 6 61 65 70 88 93 94 95
t2	1 100 107 109 118 119 123 134 135 137 2 24 27 3 32 34 37 4 49 50 51 57 6 61 7 74 93 96
t3	1 100 107 109 111 118 119 12 123 134 135 137 19 24 27 3 32 37 49 51 57 6 61 62 64 7 74 76 85 93 97

Table 6.5. Collaboration Network-Core Class Membership

Waves	Actor Identifier
t1	1 100 104 110 119 137 2 25 37 61 65 70 93
t2	1 100 119 135 137 2 24 25 3 37 6 61 93
t3	1 118 119 12 123 134 135 2 24 3 32 34 37 51 61 76 93

Here I would like to make further observations in terms of comparing the core class membership results for communication and collaboration networks. First of all, looking at the core membership composition for the two types of structures across time, we find that the actors that made up of the cores in the communication networks turned

[139] See Appendix 6.2*B* for further explanations.

out to be a more expansive set of that composed of the collaboration networks. In this research, when adopting the SIENA models to determining the rules governing network dynamics, especially in the incidences of modeling multiplex dynamics of both communication and collaboration networks, a consistent composition of network actors is a necessary requirement for proper execution of the testing procedures. In this circumstance, one needs to decide whom to include in the modeling analysis when minimizing the effect of missing data of the original 138 actors. Within the context of this research, I would like to present the following two reasoning-steps to determine the sub-composition of the actors whose networking activities would be analyzed in the SIENA models. First, the core-periphery analysis showed a more inclusiveness of core actors for the communication network. The counting of those actors in the core of communication activities incorporated those who were in the core of collaboration activities. Second, from the QAP correlation analysis conducted in the earlier section, the results confirmed that the inclusion of actors inside the communication core would also enable the study to look at the collaboration activities. Thus, I decided to use the 70 actors that appeared to be in the core of the communication network over three time periods to be the main narrowed-down group of actors to enter further modeling analysis for the study.

From the three sets of density matrices following each of the core-class membership tables (see table 6.6 and 6.7), the following findings can be documented.

Table 6.6. Core-periphery Density Table (Communication Network)

	t1		t2		t3	
	Core	Periphery	Core	Periphery	Core	Periphery
Core	0.163	0.023	0.386	0.188	0.391	0.198
Periphery	0.003	0.000	0.030	0.005	0.024	0.008

Table 6.7. Core-periphery Density Table (Collaboration Network)

	t1		t2		t3	
	Core	Periphery	Core	Periphery	Core	Periphery
Core	0.199	0.011	0.288	0.048	0.290	0.058
Periphery	0.006	0.001	0.025	0.005	0.024	0.004

First, the density of communication interactions among the core members experienced a jump from 0.163 to 0.386 immediately after the earthquake. And it was followed by a more gradual change when the level of information exchange among the core members increased to 0.391 throughout the long term recovery stage. A similar change pattern can be observed for the core development of the collaboration network. The density of interaction across the core collaboration partners jumped from 0.199 before the earthquake to 0.288 shortly afterwards. The intensity of collaborative interaction kept increasing to 0.290 during the recovery stage.

Composition Change

At stage three, I utilized the composition change function in SIENA to further reduce the impact of non-responsiveness in the data. At time wave 1, which was the period before the earthquake, some actors were non-existent. At time wave 2, which includes emergency response period and up to one year after the earthquake, these actors came into existence and started joining the network. At time wave 3, they continued to be part of the network and no one left. Such change of joiners and leavers is a qualitatively different type of missing data (Huisman and Steglich 2008) and can be specified with a composition change file being modeled as exogenous events. For the Chinese disaster recovery context, I implemented a specific decision-making procedure for coding to take into consideration the different types of actors involved during the post-earthquake period. Issues still remain in how actors would define their first date of establishment (see Appendix 5.3) and future qualitative investigations could bring further clarity in the data collection process for disaster recovery research.

As a result of this non-responsiveness treatment process, the final percentage of missing data is 15.7%, which was between the relatively safe range between 10% and 20% to reach stable estimations as specified in the RSiena Manual (Ripley et al. 2013).

Some Descriptive Measures

After narrowing down the size of the actors to 70, I first provide descriptive statistics for this dataset with each of the networks considered on its own. Then, I will briefly discuss the association between the communication and collaboration networks. Table 6.8 shows that the average degree of both types of networks experienced a rather dramatic change particularly immediately after the earthquake.

Table 6.8. Three-period Network Measures Comparison (Communication and collaboration Networks)

	Com.t1	Com.t2	Com.t3	Col.t1	Col.t2	Col.t3
Av.degree	3.169	11.593	13.119	1.051	2.797	3.678
s.d. in/out	2.941/5.182	6.785/13.489	6.930/13.966	1.608/1.894	3.252/3.427	3.807/4.796
Reciprocity	0.113	0.146	0.171	0.069	0.090	0.142
Clustering	0.168	0.237	0.275	0.074	0.107	0.135

Note: results based on a total of 70 actors. Av. degree: Average degree. s.d. in/out: standard deviation for in-degree and out-degree measures.

The average degree for information exchange increased from 3.169 to 11.593, representing increased level of agency activities among civil society actors. The graphs in figure 6.1 confirmed this point. Note that not only the isolated actors appeared in the period before the earthquake were drawn into the main connected network immediately after the disaster, the network also became more compact and dense over time, as could be demonstrated through increased reciprocity and clustering activities.

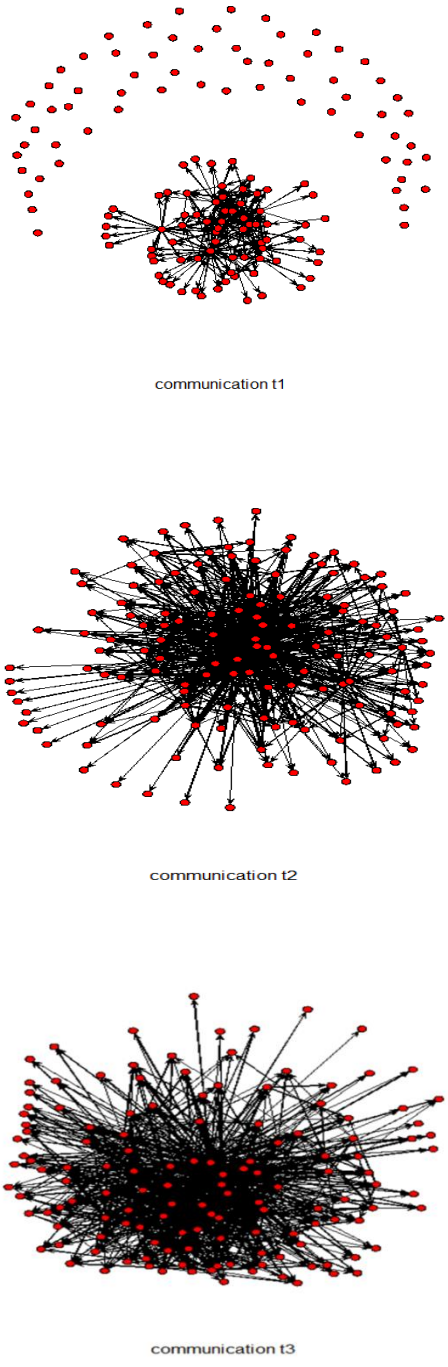


Figure 6.1. Communication Network Evolution (70 actors)

The tendency continued through long term recovery stage with a slight increase of average degree to 13.119. The collaboration networks also showed increasing trend in average degree over time but less dramatic than the communication networks. The level of reciprocity for both networks increased over time. However, neither showed a strong tendency towards reciprocity with measures well below 0.5. And collaboration networks showed weaker reciprocity than the communication networks in general. As for transitivity, communication networks generally showed stronger tendencies for clustering than collaborative networks over time. From the changes in the standard deviation measures, we can say that after the earthquake, both the in-degrees and the out-degrees of communication networks became increasingly variable with the latter higher than the former throughout the three time stages. This means that on the one hand, the agency motivations of civil society actors were being activated as prompted by the earthquake. On the other hand, the response of the activation may be differentiated. For the collaboration networks, the in-degrees were approximately as variable as the out-degrees with the latter slightly higher than the former.

The QAP correlations (70 Actors) between the communication and the collaboration networks across three observational moments showed positive signs and were relatively high in intensity.

Table 6.9. QAP Correlations between Communication and Collaboration Networks (70 Actors)

	t1	t2	t3
	Col.	Col.	Col.
Com.	0.501	0.404	0.426

Note: Com.: communication; Col.: collaboration

At the tie level (for communication and collaboration), this indicated that the two types of networks were already rather highly correlated before the earthquake. The measure dropped from 0.501 to 0.404 during the emergency response stage after the earthquake. A cause might be the mass emergence of the new grassroots groups after the disaster event and their participation shook the existing social system in such a way that all actors had to re-orient themselves to get to know one another, especially the emerging ones in the field. Over time, the system seemed to re-establish itself. But this time, the increased correlational state would represent a qualitatively different dynamic equilibrium than before the earthquake. This is because of the new actors participating and staying in the system. These trends in cross-network associations can be primary indicators in measuring social change in a post-disaster setting.

Testing and Model Specification

In this section, I first state the goal of this empirical study and the related research questions. Then, I discuss the model testing and specification processes. The first general aim of the longitudinal network modeling using RSIENA was to understand the dynamics of two structural types of relationships. More specifically, one was to look at the factors that contributed to the formation and sustainability of each of the communication and collaboration networks. Secondly, I investigated the cross-network dependencies at the actor level between communication and collaboration networks. In other words, I looked at the co-evolution of the two types of networks.

Basic Model

In this study, I focused on the most basic longitudinal model specification with the objective function depicted as follows:

$$f_i(\beta, x) = \sum_{k=1}^{L} \beta_k S_{ik}(x),$$

The symbol i represents the 'ego' or the focal actor in consideration. The weights β_k are statistical parameters indicating strength of effect $s_{ik}(x)$ (linear predictor). $f_i(\beta, x)$ represents the value of the objective function for actor i depending on the state x of the

network, which is a state being perceived from the focal actor's point of view. Such state can be in terms of relationships and in actor covariates. The network effects are all included in the function $S_{ki}(x)$.

The objective function thus determines the probabilities of change in the network, given that an actor has the opportunity to make a change, as in accordance with the modeling assumptions stated earlier. It can be depicted as "the rules of network behavior" as actors make their decisions to make or terminate a tie based on their overall evaluation of how they view the current state of the network and the effects of covariates.

In this study, the dependent variables were the observable communication and collaboration networks over the three time waves. The network evolutions of these two types of networks were functions of three general categories of independent variables: 1) Structural effects (network endogenous effects, ex. reciprocity, transitive triplets, etc.); 2) Explanatory actor variables (exogenous effects, actor-dependent, ex. actor registration status); 3) Explanatory dyadic variables (exogenous effects, dyad-dependent, ex. actor participation in disaster recovery activities). I particularly focused on the *social selection* (Steglich, Snijders, and Pearson 2010) process in this basic model. This process postulates that actors make their choice of ties based on attributes and the network embeddedness of the actor as well as those others in the network. Another type of

investigation in network evolution is called *social influence* (Steglich, Snijders, and Pearson 2010), which is a way of seeing how actor behaviors, for example, the changes in the types of recovery activities over time, would be influenced not only by their own attributes and network positions, but also on the behavior and attributes of other actors directly or indirectly tied to the focal actor. The social influence models can be explored in future research endeavors as more data on the changing behavioral data are available. This is especially promising when civil society actors develop changing fields of practices before, during, and long term after the disaster event. Future models related to disaster recovery can be built based on the co-evolution of social selection and social influence processes.

The basic model can also be advanced in two particular directions. One is to allow actors to change their ties at differential frequencies rather than treating them as constant, depending on the actor attributes or on the positional characteristics. This is called *differential rates of change* in relations to the rate function. The other type of variance of the basic model is to consider the *endowment function* (Snijders 2010), which operates only for the termination of ties. This can be examined together with the evaluation function, which is the component taking into consideration of the creation of ties. Considering the general trend of increasing tie formation for the two periods after the

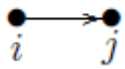
earthquake event, I temporarily ignored the differential rate of change and the endowment function in this study in order to focus primarily on the network growth aspect of the change dynamics. But in research projects beyond this basic model investigation, especially looking into the longer terms into disaster mitigation, the consideration of both types of functions should be considered for a better representation of empirical networks.

Uniplex One-mode Specification

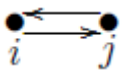
Uniplex analysis looks at the evolution of the communication and collaboration networks each on its own. The following illustrated the particular questions that the study intended to answer:

A) Structural effects: basic network effects

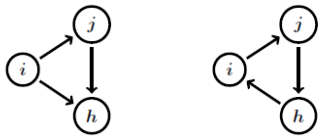
   a. Out-degree of actor i: Was there a basic tendency for the network to have ties at all? (Do actors tend to reach out to others at all?)



   b. Reciprocity: Was there a tendency for ties to be reciprocated?



B) Structural effects: transitivity and other triadic effects



. a. Transitive triplet (i, j, h) b. Three-cycle

a. Was there a tendency in communication/collaboration networks towards transitivity? ("friends of my friends are my friends?")

b. Was there a tendency in communication/collaboration networks towards hierarchy?

c. Was there a tendency in communication/collaboration networks towards generalized reciprocity?

d. Was there a tendency for actors in communication/collaboration networks to position themselves between not directly connected others? (tendency towards "brokerage"?)

C) Structural effects: degree-related effects

a. Was there a tendency for actors with high in-degrees to attract extra incoming ties 'because' of their high current in-degrees? Do high in-degrees reinforce themselves?

b. Was there a tendency for actors with high out-degrees to attract extra incoming ties 'because' of their high current out-degree?

c. Was there a tendency for actors with high out-degrees to send out extra outgoing ties 'because' of their high current out-degrees?

D) Covariates effects: exogenous effects

a. Did actors' registration background have an effect on communication/collaboration, controlling for reciprocity and transitivity? (Actor independent variables)

i. Ego effect: whether groups and organizations that were registered tended to nominate more others and hence have a higher out-degree?

ii. Alter effect: whether actors that were registered tended to be nominated by more others and hence have higher in-degrees?

iii. Ego-alter interaction effect: whether actors that were registered had a greater preference for other actors who likewise are also registered?

iv. Interaction effect of registration similarity with reciprocity: was there a tendency to reciprocation in organizations with similar registration status?

b. Do the types of activities that the actors engaged in after the earthquake had an effect on communication/collaboration? (Dyadic independent variables)

i. Did the activity choices in general have an effect on communication/collaboration networks?

ii. Were there tendencies for the actors to focus on any specific types of activities over time?

Cross-dependencies between one-mode networks

E) Did collaborations follow earlier communication among actors in the network? Vice versa?

Testing

The exact mathematical representation of each of these effects can be found in Appendix 5.4. The null hypothesis of a single element of the parameter vector is zero,

$H_0 : \beta_k = 0,$ which can be tested by the t-statistic

$$t_k = \frac{\hat{\beta}_k}{s.e.(\hat{\beta}_k)}$$

in the standard normal distribution (Snijders 2004).

Issues with Data Requirement in SAB Models

Time Heterogeneity

Referring to tables 6.10.1, 6.10.2, 6.11.1, and 6.11.2, both the communication and the collaboration networks experienced significant amount of change in tie formation from period 1 to period 2 (t1 to t2). From wave 1 to wave 2, there were 544 connections being formed or communication contacts being initiated, with the density measures jumped up from 0.046 to 0.168. At the same time, a total of 124 collaboration ties emerged, along with an increase of density measures from 0.015 to 0.041.

Table 6.10.1. Communication Network Density Indicators[140]

observation time	1	2	3
Density	0.046	0.168	0.190
Average Degree	3.169	11.593	13.119
Number of Ties	187	684	774
Missing Fraction	0.157	0.157	0.157
	Average Degree	9.294	

Note: 70 actors[141]

Table 6.10.2. Communication Network Tie Changes between Subsequent Observational Periods

Periods	0 => 0	0 => 1	1 => 0	1 => 1	Distance	Jaccard	Missing
1 ==> 2	3340	544	47	140	591	0.192	759 (16%)
2 ==> 3	3095	292	202	482	494	0.494	759 (16%)

Note: 70 actors

[140] Results from R version 2.15.1

[141] For dyad counts measures, please see Appendix 6.5.

Table 6.11.1. Collaboration Network Density Indicators

observation time	1	2	3
Density	0.015	0.041	0.053
Average Degree	1.051	2.797	3.678
Number of Ties	62	165	217
Missing Fraction	0.157	0.157	0.157
	Average Degree	2.508	

Note: 70 actors[142]

Table 6.11.2. Collaboration Network Tie Changes between Subsequent Observational Periods

Periods	0 => 0	0 => 1	1 => 0	1 => 1	Distance	Jaccard	Missing
1 ==> 2	3885	124	21	41	145	0.220	759 (16%)
2 ==> 3	3808	98	46	119	144	0.452	759 (16%)

Note: 70 actors

The average degree in the evolution of communication network increased from 3.169 to 11.593. This means that on average, approximately 8 more ties in the communication network were being formed when considering the earthquake as the critical time point of dividing wave 1 and wave 2. Compared to the period from t2 to t3, the change in average degree was rather smooth from 11.593 to 13.119. The changes

[142] For dyad count measures for collaboration network, see Appendix 6.5.

from t1 to t2 and from t2 to t3 for the collaboration network followed similar patterns. There were 124 ties being formed from wave 1 to wave 2 as compared to 98 ties from wave 2 to wave 3.

From these measures, we can conclude that both the communication and collaboration networks were in a period of growth with the second network wave consists many more ties than the first wave. Such changes in the growth of both networks provided primary descriptive indication that the catastrophic event such as the Wenchuan earthquake did trigger a change process in the growth of civil society, especially in terms of the activities of social groups and NGOs. Over time, the connections formed in the communication and collaboration networks were also being sustained.

The *Jaccard index* is normally used when one observes significant changes in the network ties in order to detect whether the data collection time points are not too far away. This measure calculates the amount of change between two waves by:

$$\frac{N_{11}}{N_{11} + N_{01} + N_{10}},$$

where N_{11} is the number of ties present at both waves, N_{01} is the number of ties newly created, and N_{10} is the number of ties terminated (Snijders, Bunt and Steglich 2010). If

this value is preferably greater than .3, and values lower than .2 would lead to doubts about the assumption that the change process is gradual, compared to observation frequency. The Jaccard Index from t1 to t2 for the communication network is .192 and for collaboration network is .220. However, as Snijders, Bunt and Steglich (2010) pointed out, if the first wave has a much lower density than the second and the network is indeed going through a period of growth, one may look at the proportion:

$$(N_{11}/(N_{10} + N_{11})$$

Measures higher than .6 are preferable and between .3 and .6 are still acceptable. By calculation, the proportions for both communication and collaboration networks are higher than .6 in this study.

An important issue that arises from this type of changes in tie growth in longitudinal network data is *time heterogeneity*. If the model specification from t1 to t3 does not take into account such tie changes over these multiple time periods, the statistical inferences regarding the rules governing the network evolution will lead to erroneous conclusions. Previous network simulation research (Lospinoso et al. 2011) considering time heterogeneity indicates that estimation results will average over the

heterogeneity if the models are specified homogeneously. In order to specify the rules for network dynamics accurately while taking into account the need to assess time heterogeneity for communication and collaboration networks, my model specification includes: 1) Estimating model #1 from t1 to t2; 2) Estimating model #2 from t2 to t3; 3) Estimating the complete model #3 from t1 to t3. The results will be composed of a total of 6 separate models.

Conditional and Unconditional Model Estimation

There are two Methods of Moments estimation methods in SIENA: conditional and unconditional. The difference between them is the *stopping rule* for the simulations of the network evolution (Ripley et al., 2012). In the unconditional estimation, the simulation of the network evolution in each time period carries on until the predetermined time length has elapsed. In the conditional estimation, the simulations for each period run until a stopping criterion calculated from observed data is reached (Ripley et al. 2012)

Models estimating period from t1 to t2 and period from t1 to t3 utilized the unconditional method for the following reason. As part of the research endeavor in this study, one characteristic of the network data collected is there are actors that were non-

existent before the earthquake and being self-organized into informal social groups after the event, in this case, the event is distinguished by the dividing time point of t2. In the model specification process, such change is called "network composition change" and a separate file needs to be created for SIENA to recognize this characteristic. For networks with such composition change due to actors joining the network at t2, only the unconditional estimation procedure is available.

Models estimating period from t2 to t3 used the conventional conditional method. During this period, no actors left the network so the number of actors stayed the same. In general, the conditional estimation is considered slightly more stable and efficient.

Uniplex Results[143]

Communication Network Evolution

Initially, dynamics of period 1 (from wave 1 to wave 2) was estimated separately from period 2 (from wave 2 to wave 3) for communication and collaboration networks respectively. Doing so allowed me to highlight the substantial time heterogeneity in parameters such as out-degrees as a result of the impact of the earthquake event. This can also distinguish the exact structural effects (within-network effects) that govern the

[143] Uniplex results refer to the findings on the evolution of each type of network by themselves.

changes from before the disaster to shortly afterwards and for the period into the long term recovery stage.

Since the Wenchuan earthquake, which happened between wave 1 and wave 2, was such a dramatic event that induced significant changes (in important parameters of interest) in the Chinese civil society, a separate analysis enabled me to take a closer look to understand how rules governing network structural changed comparing immediately after the crisis event and during the long term recovery period. Practically, knowing which structural effects were consistent in making statistically significant contributions to network evolution for these two time periods also allowed me to make better judgment in specifying comprehensive models for period from t1 to t3. This sequence would also result in faster convergence in the final model-building.

Properties of Communication Network

Emergency Response (t1-t2)

Due to the existence of both one-mode and two-mode networks in the model estimations, both the in-degree popularity and out-degree popularity parameter estimates were transformed by a square root for decreased variability across the two types of networks (Snijders et al., 2012). It is also worth noting that the constant covariate such as

actor registration status is dichotomous with values of 1 and 2. The value 1 means registered and value 2 means unregistered. This is the case when interpreting results for each network separately.

For emergency response period, the second and third columns in table 6.12 illustrate the findings.

Table 6.12. Rules Governing Emergency Response and Recovery Periods Communication Network Evolution

Effect	**t1-t2 (Emergency Response)**		**t2-t3 (Recovery)**	
Within-network	**par.**	**(s.e.)**	**par.**	**(s.e.)**
Out-degree	-3.2974* *	(.1848)	-4.1786* *	(.6945)
Reciprocity	.4064 †	(.2316)	.9131* *	(.1729)
Transitive triplets	.1127* *	(.0391)	.0782*	(.0354)
Three-cycles	-.1190	(.0746)	.0127	(.0451)
Transitive ties	-.8942* *	(.2094)	1.0070* *	(.3500)
Balance	-.0896* *	(.0111)	- .0092	(.0103)
In-degree popularity (Sqrt)	.9301* *	(.0724)	.4276* *	(.0626)
Out-degree popularity (Sqrt)	-.1655*	(.0760)	- .2902*	(.1184)
Out-degree activity (Sqrt)	-	-	.1463	(.1310)
Int. Registration similarity x reciprocity	-1.3940* *	(.4035)	- .4819 †	(.2692)
Activity			- .0734	(.1141)
Registration alter			- .0648	(.1314)

Registration ego			.4123**	(.1225)
Registration ego x registration alter			.1150	(.2488)
Housing alter			.0338	(.1196)
Housing ego			-.2772*	(.1332)
Housing ego x housing alter			.8441**	(.3068)
Eld_dis alter			.0022	(.1116)
Eld_dis ego			-.2187†	(.1114)
Eld_dis ego x Eld_dis alter			.1376	(.2154)
Wom_chil alter			.0628	(.1461)
Wom_chil ego			.7393**	(.1536)
Wom_chil ego x wom_chil alter			.1786	(.2206)
Env alter			-.1015	(.1089)
Env ego			-.4972**	(.1451)
Env ego x env alter			.3074	(.2344)
Psy alter			-.1589	(.1291)
Psy ego			.3977**	(.1191)
Psy ego x psy alter			.3261	(.2258)
Liv alter			.1657	(.1193)
Liv ego			-.0224	(.1362)
Liv ego x liv alter			.3210	(.2171)

† P<0.10, * P< 0.05, ** P<0.01 (two-sided).

The most basic effect was the out-degree of actor i and it was strongly significant. This represented a basic tendency for the network to have ties at all. This might be driven by the altruistic intentions of the social actors to get involved in the emergency response period right after the earthquake. However, according to Snijders, van de Bunt, and Steglich (2010), most of the networks are sparse with densities below 0.5, which means that the costs of initiating a tie to an arbitrary actor "with no characteristics or tie pattern making him/her especially attractive to i, the cost will usually outweigh the benefits (10). This will generally yield a negative parameter in out-degree effect.

Regardless, the statistically significant parameter estimate of out-degree effect indeed demonstrated that the communication network during this period did have a tendency to build ties in order to counteract with the costs of an arbitrary tie[144]. Actors started out by contacting others that were also involved in the emergency response process to seek out further information immediately after the earthquake. Communication network at this period of time showed tendencies toward reciprocity. Reciprocated responses were being valued positively and this revealed an initial evidence of the emergence of a Chinese civil society triggered by the Wenchuan earthquake.

[144] Please refer to Appendix 6.4 for further mathematical representations of the effects.

Aside from reciprocity, the emergency response communication network also showed tendencies toward various types of clustering, or network closure effects. One was the ***transitive triplet*** effect representing closures of the type $\{i \to j \to h; i \to h\}$ as well as $\{i \to h \to j; i \to j\}$. This effect postulated that more intermediaries will add proportionally to the tendency to transitive closure. From the results table, we can see that two measures for transitivity, transitive triplet effect and transitive ties effect, were positively significant. This means that the "friends of friends tend to be friends". The communication relationship triangle had a tendency to be closed. The transitive triplet effect is often discussed together with the three cycle effect, which can be interpreted as generalized reciprocity as the opposite of hierarchy. In the output table (see table 6.12), the findings showed that the emergency response communication network did not have a tendency to develop three-cycles that would work against the hierarchical ordering exemplified by transitive triplet effect. In the context of emergency response after the earthquake, this can be interpreted as a sense of "eagerness for sociability" for civil society actors to build up ties with others. Actors on the initiation end of a triadic relationship also tended to close-up the transitive circle on their own action, rather than waiting for the actor on the other end to reach out.

Another network closure effect being tested was the *balance effect*, which measured the tendency for the network to have and create ties to other actors who make the same choices as the ego (actor i). This effect was significant but negative. This meant that there were few balanced triadic closures that would reveal a network tendency to have and create ties to other actors who made the same choices as ego. In other words, the role formation of Chinese civil society actors during the response period might be at a stage of diversification when considering the ways how actors reach out to others. When looking at the number of outgoing choices and non-choices that actor had in common, few actors can replace the role of the others, or having structural equivalence with respect to out-ties (Snijders et al. 2010).

In-degree popularity effect was positive, indicating actors with higher in-degree were more attractive for other actors to send further incoming ties. In other words, high in-degrees reinforce themselves and there was also a tendency for differentiated actor in-degrees in the communication network. This might be due to the fact that some actors emerged to become more trusted than others immediately after the disaster. The out-degree popularity effect was negative, indicating that those actors who nominated many others in the communication network were actually less popular when considered by others as potential information exchange partners.

In this model, I also included an interaction effect of registration status similarity with reciprocity. The result found negative interaction between actors' reciprocity and them having the same registration status. At the first glance, this result was counter-intuitive because we would expect actors would be more likely to reciprocate those who have the similar traits with themselves. For this study, the negative parameter can be interpreted as follows. Tie reciprocation might be easier to form if two actors had the similar registration status and this won't bring much benefit or "satisfaction" to the actors. But for a tie to be reciprocated for two actors with different registration status, the other actor would develop more appreciation and also a sense of accomplishment in terms of reaching out for those that were of different traits.

Overall, the civil society communication network immediately after the Wenchuan earthquake showed the following evolutionary characteristics: there was a relatively strong tendency for reciprocity as demonstrated by the significant *reciprocity* parameter; there was a strong evidence for transitive closure, as seen in the significant effects of *transitive triplets* and *transitive ties.* The positive parameter for the former and the negative sign for the latter showed that there was a strong tendency for civil society actors to develop their proactivity immediately after the crisis event; the network closures also showed few structural equivalence with respect to outgoing ties, as demonstrated by

negative balance effect; The tendencies toward closure were not completely egalitarian and showed some evidence for local hierarchical formation, as seen in significant positive in-degree popularity effect and negative out-degree popularity effect; the emergency period did not show evidence of tendency to reciprocation being segregated by registration status.

Disaster Recovery (t2-t3)

The findings for this period of time are shown in the third and fourth columns of table 6.12. When compared to the communication network in the emergency response stage, the recovery period showed the following properties. First of all, the network continued to have strong tendencies for reciprocation, indicating that civil society actors' initiation of communication and information exchange ties to others during the emergency response stage were not merely impulsive, they showed signs of commitment and sustainability into the longer term. Secondly, the network remained to have strong tendencies for transitive closure, demonstrated by significant transitive triplets as well as transitive ties effects. However, the balance effect turned out to be insignificant during the recovery period. This showed that the communication network might start to stabilize over time. Thirdly, the tendency for local hierarchization continued to be evidenced by

positive in-degree popularity effect with negative out-degree popularity effect. This meant that over the long term, active civil society actors with higher out-degrees were still less likely to be chosen as communication partners, demonstrating some kind of status effect in the network dynamic. Fourthly, the stronger tendency to reciprocation in cross-registration status than same-registered status relationships was being sustained from emergency response into the recovery stage.

In the earthquake recovery case, since the non-registered actors tended to be those that were most grass-root and domestically originated, the stronger tendency to reciprocation in actors with differentiated registration status than same-status communication connections can be interpreted as a tendency for civil society actors to develop a general nurturing environment to help the development of non-registered social groups. Despite the fact that China is known for its harsh institutional environment for newly formed social groups to establish and sustain over time, particularly after the government established three-year time limit for earthquake recovery, civil society actors showed consistent tendency for cross registration status ties. The network is less likely to be segregated by registration status and there could be a sense of reaching towards a common goal of disaster recovery.

For the recovery stage, a constant dyadic covariate was added to the model. In the original survey, the respondents were asked to name the type(s) of disaster recovery activity their groups or organizations had been engaged in after the earthquake into the recovery period. I then tested the significance of *activity* as an aggregate constant dyadic covariate to examine its overall effect on communication network evolution. I also singled out each one of the activity types as constant covariates in order to see their respective effects on the dynamics of the communication and collaboration networks. These constant covariates are dichotomous with value of 0 meaning not participating in one type of activity and a value of 1 meaning participated in one.

The results showed that activity as an aggregate independent variable was not significant. However, when testing for the significance of a variety of types of activities during the long term recovery period, the following results can be concluded. Civil society actors who participated in the activities of *housing recovery, caring for the elders and disabled population*, and *environmental protection* tended to communicate less with others in the network. On the other hand, those who participated in the social work areas of activities such as *caring for women and children* and *psychological counseling* tended to engage in communication and information sharing long term after the earthquake. Furthermore, actors who engaged in housing recovery activities also tended to have

greater communication preference for other actors who also participated in the field of housing. This homophily effect only existed for the area of housing and not with any other types of activities. Lastly, note that the *registration ego* effect turned out to be significant during this period, indicating homophily with respect to registration was strong. Since higher values of registration status represented non-registered actors, the result meant that during disaster recovery stage, informal social groups tended to engage in building and initiating more communication and information sharing relationships.

In general, the main differences between the emergency response and the long term recovery communication dynamics were that ties were more strongly being reciprocated, less tendencies for local hierarchy, for recovery as compared to emergency response period. The communication network evolution immediately after the disaster was also more strongly dependent on tendencies to reciprocation in cross-registration status relationships.

Collaboration Network Evolution

Properties of Collaboration Networks

Emergency Response (t1-t2)

The findings for the emergency response properties are illustrated in the second and third columns of table 6.13 below.

Table 6.13. Rules Governing Emergency Response and Recovery Periods Collaboration Network Evolution

Effect	**t1-t2 (Emergency Response)**		**t2-t3 (Recovery)**	
Within-network	**par.**	**(s.e.)**	**par.**	**(s.e.)**
Out-degree	- 3.8537* *	(.4141)	-3.7640* *	(.4236)
Reciprocity	2.0212* *	(.3194)	1.6925* *	(.4885)
Transitive triplets	.0223	(.1356)	.5256* *	(.1630)
Three-cycles	.0776	(.3556)	- .2431	(.3105)
Transitive ties	-	-	-	-
Balance	-	-	- .2360*	(.0926)
In-degree popularity (Sqrt)	.8369* *	(.1174)	.6352* *	(.1165)
Out-degree popularity (Sqrt)	-	-	- .7571* *	(.3011)
Out-degree activity (Sqrt)	.3505* *	(.1200)	-	-
Int. Registration similarity x reciprocity	- 1.3953*	(.6009)	- .7686	(.6725)
Registration alter			- .5694	(.4224)

Registration ego			- .2072	(.4999)
Registration ego x registration alter			.1603	(.5943)
Activity			-. 3967	(.3250)
Housing alter			-. 4900	(.3257)
Housing ego			- 1.8031*	(.8568)
Housing ego x housing alter			2.3617**	(.8604)
Eld_dis alter			.2598	(.3179)
Eld_dis ego			- .4378	(.3010)
Eld_dis ego x Eld_dis alter			.5907	(.5950)
Wom_chil alter			- .0693	(.3207)
Wom_chil ego			.2287	(.3957)
Wom_chil ego x wom_chil alter			- .0352	(.5166)
Env alter			- .1723	(.2782)
Env ego			- .3602	(.4528)
Env ego x env alter			.6036	(.5503)
Psy alter			.8445*	(.3447)
Psy ego			.4556	(.4736)
Psy ego x psy alter			.8709†	(.4998)
Liv alter			.4918	(.3198)
Liv ego			.5026	(.3636)
Liv ego x liv alter			.7183	(.5244)

† P< 0.10, * P< 0.05, ** P<0.01 (two-sided).

The collaboration networks during the emergency response period showed much stronger tendency toward reciprocity than their communication network counterparts. This is reasonable because project collaboration normally infers greater level of commitment on both engaged parties than information sharing activities. There was no evidence showing tendencies for transitive closure. This can be interpreted as actors tended to be more cautious in building collaboration ties. The three cycle effects were not significant. For example, there was no tendency for the following two circumstances: 1) two-path $i \to j \to h$ closed by the tie $i \to h$, 2) two-path $i \to j \to h$ closed by the tie $h \to i$. This could be due to the nature of collaborative ties that were inherently stronger and harder to build than communication ties. This also tells us that even though actors were connected by a common collaborative partner, the condition was not sufficient to develop a trend for actors on the two ends (i and h) to close the relationship loop by collaborating. This could be due to two reasons. One is that there could be certain institutional barriers, such as going through the government required establishment procedures which usually takes time and resources from both engaged actors. The other reason could be the inherent nature of the catastrophic event. For emergency response period from t1 to t2, the attention of the actors were very much focusing on providing immediate support to alleviate the impact of the earthquake. At this period of time, a

huge amount of efforts could be diverted towards the group or organization acting alone while it was still possible that they could always communicate with others.

Similar to communication networks at this period, in-degree popularity was again positive, indicating high in-degrees reinforced themselves, which would lead to high dispersion of in-degrees across the network. Also being found significant was the positive *out-degree activity* effect reflecting the tendency for actors who nominated many collaboration partners sending out extra outgoing nominations. There was a high dispersion in naming collaboration partners among the civil society actors. Essentially, the emergency response period showed that the collaboration networks had tendencies to differentiated in-degrees and out-degrees of the civil society actors. This meant that the earthquake event not only triggered actors to search for communication partners for information, but also mobilized their actions in seeking the more commitment-oriented project collaboration relationships.

There was also a tendency towards reciprocation homophily with respect to registration status. Similar to the communication networks at this period of time, extending collaborative relationships with actors of different registration status was perceived to be more remarkable and would be more appreciated.

Disaster Recovery (t2-t3)

The picture was quite different when it came to the long term recovery period (results shown in the second and third columns of table 6.13). First of all, the tendency towards *reciprocity* was sustained, but less strongly as compared to emergency response period. Secondly, the collaboration networks showed evidence for transitive closure, as seen in the significant effects of *transitive triplets*. This meant that actors became proactive in initiating collaboration ties toward others. Such could be a sign indicating civil society actors started to think about different organizational survival strategies to become sustainable over time. They could start getting invested in their particular area of expertise. At the same time, they were getting more familiarized with others who were also involved throughout the emergency response period. Actors started to look each other with a long term perspective as more were willing to focus on collaboration in a particular project. However, a positive transitive triplet effect here also means that there was a strong tendency towards hierarchical order in these transitive collaboration ties. Certain actors would be more central and being perceived as more proactivity than others in initiating a closure on triadic collaboration relationships. With a non-significant three cycle effect, there was no tendency to ameliorate such an ordering.

Thirdly, the *balance* effect was negative, indicating a tendency for differentiating roles among civil society actors with few that were structural equivalent in terms of outgoing ties. In other words, actors were less likely to have or create collaboration ties to other actors who make the same choices as themselves. This was an encouraging result in that collaborative partners tended to diversify the tie choices rather than targeting the similar set of outgoing choices and non-choices. Compared to the communication counterpart, this effect came in the long term recovery stage in the collaboration network rather than during the emergency response stage.

Fourthly, the *in-degree popularity* effect was positively significant, indicating the tendency to differentiated in-degrees being sustained from emergency response to recovery stage. Just like the communication network, high in-degrees reinforce themselves. Actors that were being reached for collaboration projects also tended to attract extra incoming ties. A negative effect on the *out-degree-related popularity* means that those who nominated many collaboration partners were less popular when considered by others as potential collaborators. Together, the network evolution started to show some evidence for local heriarchization with some actors being more "well-recognized" or "well-known" than others.

For the activity-related constant dyadic covariate effects, actors who participated in housing reconstruction turned out to be less initiative for forming communication and collaboration ties during the recovery stage. On the contrary, those who engaged in providing psychological counseling services tended to create more collaborative relationships. For those who participated in these two types of activities, actors also tended to have greater preference to develop collaboration ties with others who engaged in the same type of activities as themselves, thus demonstrating homophily with respect to activity type (stronger in housing activity).

Over the long term, the collaboration networks developed tendencies to have network closures, which demonstrated a process of institutional development with actors' willingness to sustain their practice in the field beyond the emergency response. The perceived "popularity" and "social status" remained to be an important factor contributing to the tendency for differentiated in-degrees in the collaboration network. The tendency to appreciate and value cross-registration status ties towards reciprocation started out to be strong immediately after the earthquake, but no longer significant during the recovery stage. The activity constant dyadic covariate remained insignificant for both communication and collaboration networks in the recovery stage. However, there seemed to be increased activation and mobilization among non-registered civil society actors to

seek out others building psychological counseling collaborative ties particularly in the long term.

Comparing between the emergency response and the recovery periods, for a short period of time, the earthquake did trigger a propensity for actors who already reached out to many others to keep sending out more project collaboration initiatives. This "energy" receded during the long term recovery period. One possible explanation for this kind of popularity and activity effects related to out-degree could be that after the initial surge in reaching out to others for collaborative projects, actors gradually developed stable partnering relationships with certain other actors that either possessed similar traits with themselves or the existence of connections to them were strategically significant for the survival of these actors. By "strategic significance", I mean over time, it was possible that actors realized that was necessary for them to get connected to particular actors in the network. As we have seen the results for the clique formation in the collaboration network from the last Chapter, the state actor and the market actor were regarded as the top targets from the perspective of civil society actors. This was also being manifested as a way to gain access to the target population in the earthquake impacted area, to sustain their legitimacy over time, or a channel to show their commitment to the field of social development of the disaster impacted communities. Here, I particularly illustrate the

example of actor NGOLF in terms of its efforts in seeking legitimacy so as to facilitate its long term functioning commitment in its own field of specialization.

The Case of Actor NGOLF

The uniqueness of the actor's institutional formality lies in it having successfully gaining a special type of legal registration status without having a sponsor unit from inside the government. Being a grassroots group obtaining such a registration status to become a formal NGO marked the actor being the first in the city of Chengdu. According to the participant's recall, there were no such pilot examples in other cities such Shenzhen, Guangzhou, and Beijing back at the time of the interview in 2011. As participant was communicating with the Ministry of Civil Affairs through the process, it became clear that although the tasks being performed by the actor are education-related, the functions were more related to "general social education", rather than formal education provided by schools. Therefore, the activities being performed ruled out the possibility of having Ministry of Education as its sponsor. "On the other hand, neither

does the Bureau of Civil Affairs would want to be our sponsor, as a result, we became a stand-alone formal registered work unit without a sponsor"[145].

Tracing back the motivations for the actor to pursue such a status in the first place, the participant recalled that it was not their primary intention in targeting this kind of unique registration status[146]. What he thought more about was how to receive a legal status for the group. This is because without having a legal status by being registered, the actor would face two types of functioning obstacles. First of all, the channels available for obtaining funding will be significantly reduced. When applying for funding as a formal legal entity, it not only shows the actor's "formal status" but also signifies that the actor is operating as a "work unit" with "its own governing board and supervisors". The second factor is related to the actual functioning of the actor. When making connections to the local schools in Chengdu and suggest assisting them in building a set of youth-development activities for their students, "it will no longer be us showing up with an individual request, but in the form of a 'work unit'", as described by the participant of NGOLF. For example, "when contacting the youth palace (with a legal status), it will be discussions between two work units rather than at the individual level. (The other party

[145] For Chinese, refer to NGOLF-01-05 in Appendix 6.6.1

[146] For detailed account, refer to Appendix 6.6.CaseNGOLF.3.

will perceive us as) an entity that is nationally accredited with a registration certificate. Compared to showing up without such formally established institutionalized status, there will be a sense of basic trust at the beginning. It might work out if there were pre-existing personal acquaintance connections, but if no one knows who we are, having a certificate is critical". (NGOLF-01)

> For example, if we make contacts with places like Youth Palace, (a registered status would mean that) we will be discussing matters with them as a formal work unit, rather than as representing individuals. This entity is formally approved by the government, and we also have certification. Comparatively (as when you don't have such status), (others) will have some initial basic trust for you. It wouldn't matter much if they know you in person beforehand, but if not, (having such a formal status) would be better. (NGOLF-01-06[147])

Along with the discussion on the topic of the importance of institutional informality, the participant went further to explain one other alternative kind of registration status that was available for it to choose from back at the time. As commonly understood among civil society actors at the time of the interview, there are two general sub-categories in distinguishing an already obtained registration status. One represents those registered with the Ministry of Civil Affairs as nonprofits, also called "民政注册" in Chinese. The other one represents those actors registered as a private enterprise, named

[147] For Chinese, refer to Appendix 6-6-2.

as "工商注册". As an alternative "route" to gaining a formal legal status, NGOLF could have applied for a status representing itself with a business identity even though it can still perform tasks as a nonprofit entity. For the participant, however, this was not such an appealing alternative due to the following two reasons. On the one hand, once formally registered as a business entity, any kind of outside donation will still be subject to paying taxes, thus being treated as a for-profit organization. On the other hand, it makes it difficult to gain the initial trust from the people that the programs are intended to serve. The participant explained this point further:

> Many were registered as private enterprises, and when signing agreements with others, they will always be seen as a business…including the stamps they use would represent them as companies. If the other party doesn't know you well, they would think that you were probably a fake or something, or maybe wanted to take advantage of the warm-heartedness of others to run a business. We've experienced all of these kinds of incidences. But over the long term, they would get a chance to see that you are truly into it to do real works, then, things will be fine. The thing is that there will always be people who don't know you well, and if you show them that you are a formal social entity, not a private firm, many of their worries will be cancelled out immediately. (NGOLF-01-07[148])

This account illustrates the main drawback of registering a civil society actor as a private for-profit enterprise. For actor NGOLF, whose communication platform-building activities centered on reaching out to potential social and state actors that might not know

[148] For Chinese, refer to Appendix 6.6.3.

well about the works of NGOLF beforehand, not gaining the initial sense of trust from its potential partners would greatly hinder the initial "facilitating" role that the actor intended to play in the field of youth education and development. So far, from the accounts of different key participants among the civil society actors thus examined, each of the two kinds of the most commonly named registration status has its own drawbacks that were perceived to hinder the independent growth of the civil society actor. Recall that from the examination of actor SG4, although registering with the Ministry of Civil Affairs would help the actor gain a legal institutional status, there was still reluctance in gaining such official recognition mainly because the existence of a government sponsor would be considered submitting to government oversight and control. The desire to make its own independent decisions free from government attachment is a synergy at work for such grassroots groups. For the case of the actor in this section, NGOLF, another concern was raised regarding the alternative way of gaining legal status, which is by registering as a business entity. Again, it is the independent functioning of the tasks intended to be performed by the civil society actor that would be impeded upon receiving this kind of formal status. It is amidst of these perceived institutional hurdles that a third type of alternative "route" emerged through the registration experiences of actor NGOLF. Figure 6.2 below shows a summary of the different ways of gaining institutional formality and

the box marked in red signifies the alternative identity gained by this particular actor during the disaster recovery stage after the earthquake event.

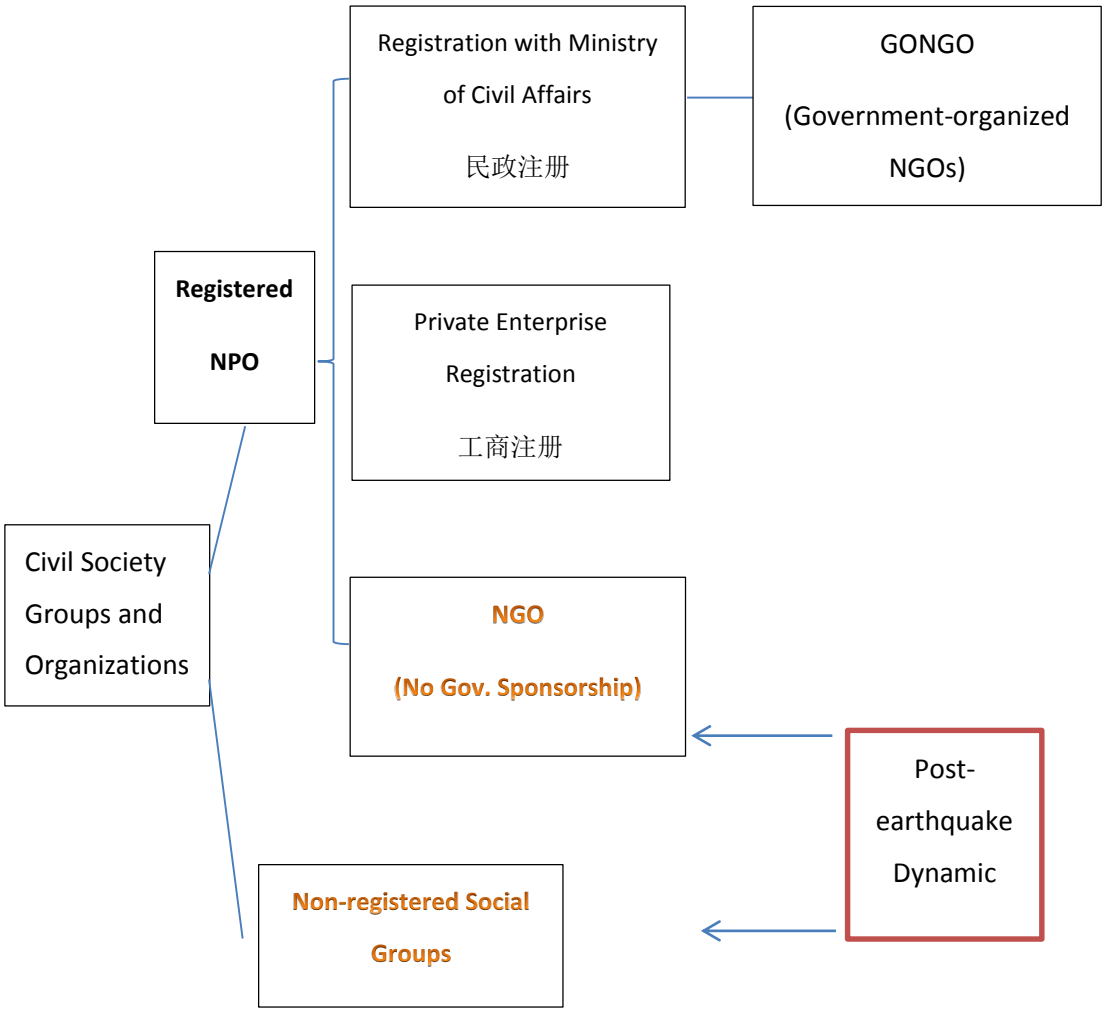


Figure 6.2. Civil Society Domain Institutional Formality Structures (Post-earthquake China)

General Model for the Role of Civil Society[149]

Since the Chinese disaster recovery dataset contains substantial time heterogeneity in some critical parameters of interest as noted earlier, I first estimated period 1-> 2 separately from period 2 -> 3 so as to mitigate the time heterogeneity. By doing so in the previous two sections, I essentially treated all of the effect parameters as dummy variables. This way of dealing with a dataset containing dramatic changes in actor behaviors due to a significant event happening in between time waves will be useful in developing separate models for emergency response and disaster recovery, thus characterizing the differences in the specific features shown in these two periods. I will now explore a more comprehensive approach in understanding of the rules governing the dynamic processes by taking into account the changes of all three time waves.

With the intention of developing a general model to understand the role of Chinese civil society in both emergency response and disaster recovery, I developed a preliminary model for each of the communication and collaboration networks while combining the three time waves altogether. Considering the time heterogeneity of parameters of interest, I incorporated a network data analysis procedure called *time test*

[149] The revised evaluation function when taking into account of time heterogeneity:

$f(A) = \sum_k (\beta_k + \delta_k^m) s_k(A)$, time dummy terms δ_k^m are being estimated through forward-selection procedure. (Lospinoso 2010)

throughout my model-building process. It is an iterative approach to utilizing a strategy for forward model selection[150] (Lospinoso, 2010; Lospinoso et al., 2011) implemented in stochastic actor oriented models. Incorporating and testing for time heterogeneity is especially important for research in disaster response and recovery settings because there are often disruptions in actor behaviors and drawing inferences on this type of heterogeneity will help with understanding the periods of disrupted behavior such as in "cooperation networks for natural disasters" (Lospinoso, et al. 2010, 149).

I generally followed the iterative decision-making procedure for conducting the time test implemented by Lospinoso, Schweinberger, Snijders, and Ripley (2010) in their simulation study. I estimated my updated models with time dummies interacted with those effects with score type tests yielding *p* values of 0.05 or less for each of the communication and collaboration networks. Table 6.14 below shows the results. The term "Dummy2" indicates the corresponding values for a dummy term interacted with the preceding effect. Because the significant changes in the descriptive measures of parameters happened at time wave 2 (t2), the dummy terms were being included for this particular period to take into account of the heterogeneity issue.

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[150] The test procedures are implemented by the Siena Time-Test function explained in RSiena Manual (Ripley et al. 2012, 107). Specific forward-selection procedure for time-test followed the implementation tutorial in RSiena by Lospinoso (2010).

Table 6.14. General Rules Governing Communication and Collaboration Network Evolution

Effect	**communication**		**collaboration**	
Objective function	**par.**	**(s.e.)**	**par.**	**(s.e.)**
Out-degree	-3.0270**	(.1785)	-3.1413**	(.1898)
Reciprocity	.6821**	(.1265)	1.9836**	(.2784)
Transitive triplets	.1045**	(.0176)	.4435**	(.1252)
Three-cycles	-.0482	(.0328)	-.2322	(.1992)
Transitive ties	-.1037	(.1652)	-	-
Balance	-.0506**	(.0073)	-.1413**	(.0484)
In-degree popularity (Sqrt)	.6405**	(.0423)	.7213**	(.0732)
Out-degree popularity (Sqrt)	-.2439**	(.0494)	-.5907**	(.2071)
Out-degree activity (Sqrt)	-	-	-	-
Registration alter	-.2545**	(.0914)	-.1728	(.1682)
Registration ego	1.0272**	(.1632)	1.0409**	(.3058)
Registration ego x registration alter	.2643	(.1987)	.3560	(.3403)
Registration similarity x reciprocity	-.8706**	(.2267)	-1.1860*	(.5052)

Dummy2: ego (out-degree)	-1.1919**	(.3928)	-.8425**	(.2957)
Dummy2: ego x reciprocity	-	-	-.6133	(.5496)
Dummy2: ego x transTrip	-.0088	(.0327)	-	-
Dummy2: ego x transTies	1.7816**	(.3452)	-	-
Dummy2: ego x balance	.0753**	(.0133)	-.1174	(.0879)
Dummy2: ego x inDegree Pop(Sqrt)	-.4234**	(.0848)	-	-
Dummy2: ego x outDegree Pop(Sqrt)	-	-	-.4215	(.2914)
Rate function				
Rate period 1	26.9117	(2.0641)	7.5469	(1.0093)
Rate period 2	16.7529	(1.0638)	4.3298	(.4698)

† P<0.10, * P< 0.05, ** P<0.01 (two-sided)

Communication Network Evolution

The score tests confirmed the heterogeneity in the following structural effects: *out-degree, reciprocity, transitive triplets, transitive ties, balance, in-degree popularity, out-degree popularity*. Overall, it was interesting to see the dummies completely negate

two of the effects in communication network evolution during wave 2. One was the *balance* effect. It appeared that when modeling the three time stages together, there was a tendency for actors to develop structural equivalence with respect to communication outgoing ties. This means that civil society actors actually tended to communicate and exchange information with those other actors who had a similar set of outreach ties as themselves. When looking at the overall trend of communication network evolution, there was indeed a propensity for role stabilization in terms of how actors reached out to others. The other finding was regarding the in-degree popularity effect. With the dummy interaction term at wave 2, it appeared those who were already being reached out a lot for communication purposes were less popular when considered by others as potential information exchange partners. This means that over time, civil society actors no longer tended to attract to the already more "well-known" or "popular" ones for information exchange. The communication network was less likely to be differentiated in in-degree.

The transitive triplet time dummy interaction effect was not statistically significant anymore, indicating that after considering time heterogeneity at time 2, the communication network did not have a tendency for transitive triplet type of network closure. However, the significant dummy interaction transitive ties effect still showed evidence for network closure in the long term evolution of information exchange

network. Civil society actors maintained its ability to sustain their proactivity in building communication ties.

The communication network in general still showed evidence of strong reciprocity among civil society actors. Out-degree popularity is negative, indicating that those who initiated many communication ties were less popular when considered by others as potential information exchange partners. Together with the negative effect of the in-degree popularity dummy interaction term, this means that the communication network neither had a tendency for high dispersion in actor in-degrees nor a tendency for higher correlation between in-degrees and out-degrees.

Three of the covariate effects turned out to be significant for the general model estimation. First, there was a tendency towards homophily especially with respect to reciprocity. The negative effect of the interaction of registration status with reciprocity indicated that cross- registration status communication ties were indeed being valued and appreciated among civil society actors. There was a strong propensity to reciprocation when interaction happened between one non-registered actor and a registered actor. The network was less likely to be segregated over time in this respect. The *registration ego* effect was positive, demonstrating that non-registered actors tended to communicate more and thus being more active than their registered counterparts. However, with a

negative *registration alter* effect, these non-registered social groups tended to be nominated by less others and hence had lower in-degrees. These two effects together showed that the informal grassroots actors were indeed in their emergence stage after the earthquake. On the one hand, they were not well-recognized by others in the communication network. Indeed, if a social group or organization was just formed after the earthquake and in the process of establishing itself in the field, it would indeed take some time for others to recognize its name and its works. But the encouraging finding was that these non-registered grassroots social groups exercised their agency freedom nonetheless. Regardless of such difficulties, they remained their synergy for being active and kept reaching out towards others.

Collaboration Network Evolution

In the general model estimation of the collaboration networks (see table 6.14), four dummy interaction effects were detected through the time test procedure and included in the result table: *out-degree, reciprocity, balance, and out-degree popularity*. It appeared that when taking into consideration of time heterogeneity, none of these effects that previously were prominent features of actor behavior turned out to be statistically significant. This means that the collaboration networks did not have general

tendencies for reciprocation, structural equivalence with respect to nominating collaboration partners. Neither was there a tendency for higher correlation between in-degrees and out-degrees, indicating that it was less likely that actors with high level of nomination for collaboration partners to attract extra nominations.

In terms of other structural effects without dummy interactions, the results showed similar patterns to communication network evolution. Both types of networks had strong tendencies for transitive triplets and in-degree popularity. For the former, the effect was positive, indicating evidence for network closure due to the sustaining of proactive synergy in actors building collaboration ties over time. For the latter in-degree popularity, the effect was positive, showing that both networks had tendencies for differentiated in-degrees. Actors attracting higher incoming nominations for communication and collaboration ties tended to be even more attractive for others who perceived them to be "prominent" and thus reached out to them even more.

For the overall evolution patterns of communication as well as collaboration, there was a tendency towards homophily especially with respect to cross-registration status reciprocity. Neither of the networks tended to be segregated in this respect. It showed that there was a general "welcoming" environment particularly for the nonregistered grassroots social groups emerged after the earthquake. These groups also

had a strong tendency to reach out to others for information and establishing collaboration ties. Non-registered civil society actors were therefore characterized by high level of activity and thus agency long term after the earthquake. The collaboration network evolution, however, did not show signs of difficulty being recognized by others among non-registered actors like in the communication network dynamics. This means that when it comes to commitment and institutional development, formality status of civil society actors did not enter the decision-making process. In general, the collaboration network evolution showed less tendency for status effects contributing to less hierarchization as compared to communication network. But there were signs of local hierarchy in collaboration networks with respect to transitive triplets effects.

The parameters for the rate functions were included at the bottom of the table 6.14. For communication network evolution, each actor in the network had about 27 opportunities to change immediately after the earthquake. The opportunities decreased to an average of 17. For collaboration network evolution, each actor had 7 opportunities to make a change during the emergency response period and it further decreased to 4 over the longer term. These patterns suggested that for both types of networks, the amount of change peaked in wave 2, shortly after the earthquake, and slowed down towards the long term recovery. The communication networks experienced drastically higher changes than the

collaboration networks. If a social group or organization has just formed after the earthquake and in the process of establishing itself in the field, it would indeed take some time for others to recognize its name and its works.

Institutional Formality and Registration Similarity in Reciprocity

In this section, I use qualitative data to understand why institutional formality in terms of registration status did not turn out to be a significant factor in governing the overall evolution of both communication and collaboration networks. I define "institutional formality" in terms of a state of existence when civil society actors gaining legal registration status under the current legal system in China. How such institutional status was being perceived and approached by emerging civil society actors constituted as the characteristics of pre-conditions for sustainable group/organizational actions during the long term disaster recovery. The interview accounts illustrated in the following paragraphs were from informants of those actors that emerged to have high level of in-degree and out-degree since the emergency response stage after the earthquake.

The Case of Social Group Actor #3 (SG3)

Since the group SG3 was formed as a non-registered nonprofit entity after the earthquake event, I named these not-yet-registered newly emerged entities as "social groups" in order to make note of their grass-root nature. Those registered nonprofits were named as "organizations" to emphasize on their formality. These two types can also be categorized as "formal" and "informal" according to institutional literatures. But such a formulation of analysis would not capture the bottom-up nature of the groups emerged in the Chinese context. The name of "social groups" will takes into account of the emerging nature of civil society being discussed in this study.

To the civil society actors in China, whether an entity is registered or not was perceived as being closely related to having a legal identification. And one of the major obstacles when not having such an identity for actor such as SG3 was the capability to plan and develop its own organizational structure. The young participant further explained these difficulties as the following:

> Although we can still do the kind of things that we need to do as of now, but there are still some negative effects…the most obvious one is…because we don't have the financial resources to support ourselves, and thus not being able to do more of what we would like to do, so we still have to rely on foundations to provide us with the needed financial resources. If you'd like to receive the other party's support, from their perspective, by us having a legal status would greatly facilitate

> them managing their finances and program in general. If we don't have such a status, it would raise certain concerns on their part. If our financial resources run out, we won't be able to continue to function. So this is the one thing that has given us such a headache. Our biggest hurdle right now is not being able to find a sponsor, an appropriate one that fits our functions, in order to register. This is a big problem facing us. The Ministry of Civil Affairs in Sichuan Province also got in touch with us in 2008 and told us that they were aware of our activities. And they said that it would be better for us to have a legal status and hope us be registered soon. That was their position on this matter. Therefore, it would be a big issue if we don't find a "mother-in-law. (SG3-01-10[151])

Clearly, the legal identity issue arose from the group's non-registration status is closely tied up to the entity's future financial stability and this is critical for the sustainable functioning of the group. For SG3 in particular, one of the major obstacles in obtaining such a formal identity from the Ministry of Civil Affairs was in finding an appropriate sponsor inside the government. The term "mother-in-law" used in her account has been used as a common term for Chinese nonprofits organizations to refer to their sponsors. However, what is unique about the case of SG3 in its journey seeking an appropriate "mother-in-law" arose out of its own emergence activities and motivations to provide information services towards other nonprofit groups and organizations, not vice versa.

> For example, those NGOs that were being approved to formally register were the ones that it (the government) would want you to go into the local communities

[151] For Chinese, refer to Appendix 6.6.04.

> providing services. For us, on the other hand, we are not an organization that provides direct services to the disaster-impacted population. We only service other NGOs. This is why we cannot find a work sponsor. No one would, ministry of civil affairs wouldn't, science and technology association wouldn't, they would say that we are not a research entity, and neither are we technology-related. For the Red Cross, since they assist in emergency response efforts, they would say that we are doing information-related tasks, so no. This is what happened to us so far. But we are still trying. Chengdu is now a designated as a pilot city that allows the possibility for nonprofit groups to register without a sponsor unit. But after our consultation on this matter, we found out that although this is the case, only those focusing on providing services for disadvantaged populations can be eligible for applying. Since we do not provide direct services, and neither do we face directly towards disadvantaged population, therefore, we are not eligible. Regardless, we have clearly positioned ourselves, we are providing services directly for NGOs. (SG3-03-06[152])

Therefore, the essential difficulty in the group's seeking its own registration status could be attributed to the type of service that it provided. Different from other service-oriented nonprofits operating to provide support directly towards people inside communities or other disadvantaged groups in the society, SG3 provided services to an entirely different group. The nature of its agency actions and field practices was one that promoted the development and growth of those other nonprofit groups and organizations. From the institutional perspective, it was a motivation for the group to promote a "standing up" process of actors inside the civil society domain. From the account of the senior participant (SG3-03), the group had also been persistent in pursuing its practices in

[152] For Chinese, refer to Appendix 6.6.05.

institutional-building services regardless of the registration obstacles. Here, it is essential to make a case regarding the "institutional climate" surrounding the group from two types of lenses. One was in terms of the issue of formality of the group. Then, the main obstacle was in it obtaining a legal identification by being registered from the Ministry of Civil Affairs due to its unique service partnerships. On the other hand, when such a "climate" is understood in terms of an issue of structural development that the group actively chose to embedded itself in, a persistent focus and desire to serve the growth of those other civil society actors showed preliminary signs of an emerging "enabling environment" that tended to counter the obstacles arose from the issue of formality. For the case of actor #3, such enabling environment for the development of Chinese civil society was manifested in the persistent self-identification process to define its own functioning role despite of the difficulties in formality-seeking. I thus call it the tension between formality and structurality ("enabling environment") exemplified itself through the experiences of SG3 participants after the earthquake[153].

[153] For further details regarding the institutional obstacles for actor #3, refer to Appendix 6.6.CaseSG3.3.

The Case of Actor #49 (NGO49)

From the exploration of the emergence process of the actor #49 depicted in the earlier chapter, I found that one of the key factors that facilitated the actor's execution of field practices was its ability to obtain appropriate financial resources to make them available for those it provided service towards. Thus, it became important to understand whether and how the institutional formality exerted its impact on the general emergence and development of the actor from the perspectives of its key participants.

From the organizer's (NGO49-01) point of view, the institutional formality in terms of its registration status had been only a "very small factor" in the actor's journey obtaining its resources for functioning. What mattered in the end, are the following:

> I think for this field…it is an issue of credibility. In other words, it is what Chinese called the term "word of mouth", this is very important. Our team was first established in 2005, and it's been almost five to six years now. We have never created any flier or anything to publicize ourselves. We have not created our own professional webpage even. It's always been the case that other partners have sought after us to establish collaborative relationships. It's rare for us to promote and publicize ourselves. And also, we have been quite selective in accepting projects. It's not the case that we will for it as long as they have the financial resources. We have our own standards and criteria. So I think our credibility is always very important. (NGO49-01-05[154])

[154] For Chinese, refer to Appendix 6.6.06.

Note that the factor of "credibility" was perceived as a critical one in sustaining the field practices of this actor. The organizer's interpretation of the "credibility" concept, particularly when practicing in the field of civil society, had a relational origin. What the traditional Chinese phrase "words of mouth" became essentially a way how information got spread through networks of inter-organizational relationships, when understood within the context of this study. From a network perspective, the actor as a whole had an inherent intention to refrain from reaching out towards others to promote and publicize to actively establish its own influence. Only in selected circumstances that it will reach out to initiate a collaborative relationship. In other words, perceptions of how others regard the actor's practices from its previous performances and their willingly spreading the "words" throughout the network played a greater role in how the actor gained its status over time.

The Case of Actor #4 (SG4)

When it comes to the difficulties faced by the group during its transitioning stage from performing emergence response tasks to taking actions related to the long term recovery phase after the earthquake, the "dilemma" for the group to make changes to its

institutional structure centered on the issue of obtaining funding. This was a similar issue faced by actor #3 through its transitions to the long term recovery stage. On the one hand, the founder and the participant himself both held a view that in order to maintain the group's grassroots nature formed by ordinary Chinese citizens, relationship with the government was at all avoided. According the participant (SG4-01), the founder rejected the interview invitations from the media so as not to intentionally publicize the action of the group itself. Essentially, to the founder and the participant, even obtaining a registration status through a process of having to search for a government-related sponsor, would be a restraint for the functioning of the group because the registration linkage is perceived to represent an "NGO inside the government" rather than performing as an independent social group existing separately from the functioning of the state. On the other hand, the participant was being well aware of the importance of gaining a formal institutional status through registration towards the group's securing outside funding sources. However, the decision to maintain its informal institutional status as a "social group" was reached through the following claim: "Rather than being incorporated and used by the government, we'd prefer the freedom in focusing on the tasks that we are able to perform and do them well"[155] (SG4-01).

[155] Original Chinese script: 与其那样的为政府所用，还不如自由一些做自己团队能做的事并且作好.

This dilemma faced by actor #4 revealed a particular kind of decision-making dynamic regarding the emergence of civil society after the crisis event. This actor consciously oriented its actions in a rather "distant" networked environment with the state actor. But it did not hold back in developing the initiative to reach out to others inside the civil society domain, especially right after the earthquake. From the descriptive results found in the previous chapters, the actor reached a rather high level of out-degree in terms of information exchange. From the actor's ego network analysis results[156], the "brokerage" role that the actor engaged most in since its establishment (during emergency response period) was as a "coordinator" in between other non-registered civil society actors. Brokerage measurements indeed demonstrated its efforts in acting as a medium among others brokering communication relations between registered and non-registered actors.

From the perspective of understanding the meaning and emergence of civil society in the Chinese context, the case pointed towards the following directions. First, the initial action towards an emerging civil society was taken in the form of establishing voluntary groups through self-organization. Second, obtaining institutional formality through registering with the state sector could be perceived as a form of control and

[156] Please see Appendix 6.6*D1* to 6.6*D3* for actor's ego-network UCINET output over three time periods.

attachment thus restraining the original purpose of the civil society actor in being a "free agent". Third, a "standing up" civil society was indeed being understood in relation to the level of "agency freedom" in terms of activities performed in separation from the state. Institutional transformation from informal to formal status could create "survival" dilemmas for civil society actors who held a rather strict view of "freedom" in the Chinese context. Fourth, the role of a civil society, from the participant's point of view, was one that "complement and correct" the state.

As a result of the actor's position in the issue of institutional formality through registration, it had been a rather challenging task for the group to maintain its long term functioning in the field. For example, the group once planned to build a nursing home for those elders who lost their relatives by using funds donated through various channels. However, the project eventually came to a halt due to a lack of enough funds and labor that can be devoted to finishing it up. Since then, the group was divided with group member holding two types of views on the kinds of tasks that it should perform. One side preferred the continuation of bigger and grander projects while the other preferred switching to smaller projects with narrowed-down boundaries. Up until the time of the interview with participant SG4-01, the group was still in search of an appropriate development path so as to engage its team members in the longer term. The struggle for

the actor to further define its role and identification over the longer term resulted in a significant drop in its communication outreach activities for the recovery period.

The Case of Actor #24 (NGO24)

First of all, several internal difficulties arose within grassroots groups and NGOs themselves contributed to the additional burdens on the pathways for these civil society actors to grow over time. One was the lack of the funding sources and the shortage of it could further hinder the "professional capacity-building". The other internal factor was regarding the types of activities particularly chosen by the voluntary groups after the earthquake event. To the director of actor #24 (NGO24-01), most of these voluntary groups rushed into the disaster hit areas and focused much of their attention on emergency response activities. And less attention was being paid to the long term recovery aspect of activities being established at that period of time.

Secondly, although there was still a lack of sufficient attention, or support, coming directly from the government side (at the time of the interview), the director held a rather positive outlook to the general institutional environment for the future development of grassroots groups and NGOs. For example, he perceived that the

government actually was “slowly starting to realize the importance of NGOs and was gradually re-directing its attitude towards us”. According to the recall of the director, it had stated clearly in year 2011 twelfth fifth year plan of the important role of social development in disaster mitigation and preparedness. As he was describing these observed progresses in government policy orientations, the director finally stated that “I believe that the development of existing (institutional) environment will be in more and more favor of the survival of NGOs”[157].

> LU：Then, how should one raise the government awareness of the importance of NGOs?
> NGO24-01: “In fact, there is a gradual change in government’s attitudes towards NGOs and they started to recognize our importance. For example, in the twelfth five-year plan, it raised the importance of social development and its role in the process of disaster mitigation and preparedness. In the plan, one of the critical tasks raised for the government is for it to manage well-functioning collaborations with NGOs and nurturing the development of ‘big society’. So I believe the surviving institutional environment for NGOs will keep getting better.” (NGO24-01-02)

Note that from the perspective of the director of NGO24, the “surviving institutional environment” of this envisioned “big society” incorporated civil society actors of all kinds, regardless of the registration status. This can be demonstrated by the actor’s own agency actions right after the disaster event. It had some of the most intense

[157] Detail refer to Appendix 6.6.CaseNGO24.3.

communication and collaboration outreach activities toward actors across the entire network during the emergency response stage.

The Case of Actor 51 # (NGO51)

For actor NGO51, "institutional formality" was more than just having a public recognizable formal registration status. In essence, it was less of an outward nature in possessing certain title that was meant to generate certain impressions from others, but more of an inward-looking lens through which actors could self-examine the level of devotion to the chosen activities related to civil society. From the program officer's perspective, the concept of "social group/organization" was essentially based on how an actor looked at its own field activities and self-reflected on the nature of its actions.

> This will mainly depend on their own judgments. Take *** (actor #8) for example, they will define themselves still as a volunteer group (team). Their founder used to be a full-time worker elsewhere. He would participate in the volunteer activities in his spare time. But his team had done a good job in organizing and conducting the volunteer works, and this might be related to his own work-orientation. His full-time job was at the blood center and this would allow him to meet all kinds of volunteers. He would often organize them together to conduct different kinds of activities. This is why in his mind, all of their activities belong to a volunteer act, not as an organization. He has never wanted to transition it into a formal organization neither. And he would not devote full time into it. One of our criteria in our decision-making is to see if they are doing it full-time. Only if

you are full-time will you be devoting all of your efforts in this work. (NGO51-01-06[158])

Note the recognized importance of the participants of social groups/organizations in making a "full–time" commitment in practicing in the field of civil society. In this case, the registration status was not a determining factor for NGO51 to make the decision on whether to support a civil society actor through its "incubation" program. If an actor was already registered but none of its participants operated at a full time level, based on the account of the program officer, actor NGO51 still would not accept it as one of its incubation development partners.

The particular role of actor NGO51 was motivated by its long term vision in providing an enabling supportive environment for other emerging civil society actors to develop a specific type of "institutional formality"[159]. This type of institution was characterized not only by a determination to develop full-time commitment in the field but also the capacity to sustain independent functioning. Compared to the interpretation that "institutional formality" simply as a way of representing an outcome of having a registration status, the action of NGO51showed that the phrase could also symbolize a process through which the within sector collaborative efforts co-evolving with the

[158] For Chinese, refer to Appendix 6.6.07.

[159] For detailed interview account, refer to NGO51-01-07 in Appendix 6.6.08.

institutionalization of civil society actors, regardless of the types of achieved status such as being registered entities.

Interpretive Summary of Institutional Formality

In general, informants representing different civil society actors perceived a strong linkage between obtaining formal legal registration status with seeking financial means for survival. However, there was a perceived disadvantage in gaining registered status by having sponsorships through the central and local governments, and it was the concern for the possibility of the loss of independency in making stand-alone decisions. Furthermore, the actors valued the quality of the functioning as part of the process of how they defined their identity as their roles were being institutionalized. This latter factor was perceived to be detached from the institutional formality reflected in the actors' registration status. In fact, the actors cared more about providing quality supports for the survival and growth of each other, thus generating a particularly welcoming enabling environment for the newly established grassroots emerged after the earthquake. This further explained the strong tendency for reciprocation between registered and non-

registered actors in both the communication and collaboration network general evolution patterns.

Multiplex Results

Co-evolution of Communication and Collaboration Networks

In the earlier sections, I examined each of the two types of networks in separate models where mutual dependencies between the networks were ignored. The description of the dynamics of the networks also served as a point of reference when considering the co-evolution of the two networks. Here, I tested three cross-network effects in order to determine the rules governing the dynamics of the focal network (*X*). When the dependent network is communication, the effects are illustrated as follows[160] (adapted from RSiena Manual, Ripley et al., 2013):

If both networks have the same number of columns, then the basic effect is the entrainment of *X* (communication) by *W* (collaboration), i.e., the extent to which the existence of a tie $i \xrightarrow{W} j$ promotes the creation or maintenance of a tie $i \xrightarrow{X} j$.

[160] For dependent networks being collaboration, X represents the collaboration and W represents communication.

The reciprocity effect with W (collaboration) on X (communication), representing the extent to which the existence of a tie $j \xrightarrow{W} i$ promotes the creation or maintenance of a tie, in the reverse direction, $i \xrightarrow{X} j$.

Mutuality effect with W (collaboration) on X (communication), representing the extent to which the existence of a mutual tie $i \xleftrightarrow{W} j$ promotes the creation or maintenance of a tie $i \xrightarrow{X} j$.

Properties of Emergency Response

The dyad level effects between the communication and collaboration networks showed different intensity of strength across time periods. Table 6.15 showed the results for emergency response.

Table 6.15. Co-evolution of Communication and Collaboration during Emergency Response Period (t1-t2)

Effect	**Communication**		**Collaboration**	
Within-network	**par.**	**(s.e.)**	**par.**	**(s.e.)**
Out-degree (density)	- 2.6858**	(.1752)	- 3.0841**	(.4086)
Reciprocity	.4080†	(.2164)	1.8484**	(.5166)
Transitive triplets	.1159**	(.0381)	.2510	(.2407)

Three-cycles	- .1772**	(.0686)	.1353	(.5831)
Balance	- .0630**	(.0113)	- .0908	(.0595)
In-degree popularity (Sqrt)	.5502**	(.0725)	.7532**	(.2255)
Out-degree popularity (Sqrt)	- .1326*	(.0689)	.0097	(.2041)
Between-network: dyadic				
Communication	-	-	.8897	(.6207)
Reciprocity with communication	-	-	.4946	(.8179)
From communication agreement	-	-	- .4566	(.2742)
Collaboration	.4534	(.3640)	-	-
Reciprocity with collaboration	.6866	(.6963)	-	-
From collaboration agreement	- .5661**	(.2111)	-	-
Rate function				
Rate Period 1	27.4873	(2.4715)	7.3177	(1.3183)

† P<0.10, * P< 0.05, * * P<0.01 (two-sided)

During this period of time, none of the direct and reciprocal effects were statistically significant. Only the mutuality expressing the effect from agreement on collaboration to communication turned out to be strong, but negative. The existence of a mutual collaboration tie actually made it less likely for the creation or maintenance of a

communication tie. From the first sight, this result was somewhat counter-intuitive because normally a collaborative relationship between a pair of actors would promote the less binding communication relationship. But bringing in the context of the disaster response in China, this could be interpreted as evidences of significant social reconstruction among civil society actors and the development of a possible condition for the institutional emergence process to occur. Previous rules and bindings were being broken due to the earthquake event thus creating opportunities for new kinds of social settings to emerge. It also appeared that the within-networks effects for the collaboration network were not mediated by the existence of any communication ties. This could be understood as the creation and maintenance of emergency response collaboration networks were actually the result of self-emergence and has a dynamic of its own.

Properties of Disaster Recovery

Compared to the emergency response stage, the dyad-level effects between communication and collaboration networks showed increasing strength over the long term disaster recovery period. The "between-network" effects listed in table 6.16 below illustrate the findings.

Table 6.16. Co-evolution of Communication and Collaboration during Recovery Period (t2-t3)

Effect	**Communication**		**Collaboration**	
Within-network	**par.**	**(s.e.)**	**par.**	**(s.e.)**
Out-degree (density)	-1.8860**	(.1990)	-3.1639**	(.2772)
Reciprocity	.9052**	(.2071)	1.2428**	(.3929)
Transitive triplets	.0966**	(.0144)	.4612**	(.1299)
Three-cycles	.0659	(.0681)	-.3245	(.2796)
Balance	-.0172**	(.0029)	-.1402**	(.0544)
In-degree popularity (Sqrt)	.3521**	(.0565)	.4333**	(.1134)
Out-degree popularity (Sqrt)	-.4548**	(.1234)	-.5320*	(.2429)
Activity	-.0121	(.0434)	.1383	(.0895)
Between-network: dyadic				
Communication	-	-	.9713**	(.3851)
Reciprocal communication	-	-	.5913	(.4678)
From communication agreement	-	-	-.0518	(.0336)
Collaboration	2.0719**	(.6736)	-	-
Reciprocal	-.0836	(.4409)	-	-

collaboration				
From collaboration agreement	-.0708	(.0866)	-	-
Rate function				
Rate Period 2	19.7853	(2.0148)	5.2267	(.7013)

† P<0.10, * P< 0.05, * * P<0.01 (two-sided)

Direct effect from collaboration in the formation and maintenance of communication network, as well as the effect from communication for the establishment and maintenance of collaboration networks were both strong, with estimated parameter values of 2.0719 and 0.9713 respectively. This means that the existence of a collaboration tie strongly promoted the creation or maintenance of a communication tie, and vice versa. The effect was even stronger for collaboration on mediating the evolution of the communication relationships. Therefore, after the initial "turbulence" of the social system, the new structures emerged short-term after the disaster event was clearly being maintained through the cross-mediation of collaboration and communication networks. The binding force was particularly strong for the long term recovery period. The structural effects of the uniplex networks could be interpreted as the by-products of the multiplexity of communication with collaboration.

General Model of Network Co-evolution

When examining the three time waves together to develop a general model, the effects of co-evolution between collaboration and communication networks turned out to be more intense than when considering the emergency response and recovery stage separately. The corresponding results can be found in table 6.17 below.

Table 6.17. Co-evolution of Communication and Collaboration (t1-t3)

Effect	**Communication**		**Collaboration**	
Within-network	**par.**	**(s.e.)**	**par.**	**(s.e.)**
Out-degree (density)	- 1.7302**	(.1125)	- 3.2158**	(.2288)
Reciprocity	.8464**	(.1984)	1.6446**	(.3298)
Transitive triplets	.0915**	(.0147)	.4330**	(.0988)
Three-cycles	- .0721**	(.0238)	- .1684	(.2283)
Balance	- .0232**	(.0031)	- .0862**	(.0229)
In-degree popularity (Sqrt)	.2318**	(.0360)	.5042**	(.0788)
Out-degree popularity(Sqrt)	- .2215**	(.0415)	- .3694**	(.1069)
Between-network: dyadic				
Communication	-	-	1.1285**	(.3299)
Reciprocal	-	-	.2137	(.4141)

communication				
From communication agreement	-	-	- .0615*	(.0263)
Collaboration	2.3954**	(.6272)	-	-
Reciprocal collaboration	.0695	(.4643)	-	-
From collaboration agreement	-.2981*	(.1238)	-	-
Rate function				
Rate Period 1	125.1282	(30.3747)	15.2952	(3.9505)
Rate Period 2	15.5145	(1.0192)	4.2783	(.5025)

† P<0.10, * P< 0.05, * * P<0.01 (two-sided)

First of all, the direct effects for overall network evolution trend were stronger than considering the recovery period alone, with estimated parameter values of 2.3954 and 1.1285 for communication and collaboration network respectively. This indicated direct cross-enhancement of institutional development for both types of network structures. The mutuality effects were marginally strong, with parameter values of -0.2981 and -0.0615. The negative signs can be interpreted as follows. On the one hand, the existence of a mutual agreement on collaboration tie made it less likely for creating or maintaining a communication tie. On the other hand, the agreement of communication ties also made it less likely for creating or maintaining collaboration ties. This means that looking at the three time stages altogether, the significant structural effects appeared in

each of the two types of networks were not mediated by the mutuality agreement of the other type of network. The structural evolution of communication and collaboration networks was better explained by the "embeddedness" of each kind of tie in a multiplex tie through direct effects. In other words, the network dynamics of communication and collaboration were the consequences of multiplexity of only the direct influences between communication and collaboration. The creation and maintenance of the after the earthquake shock was less mediated by the more binding mutuality ties, instead, the mere existence of one type of tie was sufficient. This also inferred that the force undergirding the institutional change— creation and maintenance of a tie in each network environment—was certainly strong enough to support structural endurance and transformation. For all three types of examinations, the reciprocity cross-network effects were not statistically significant at all, thus indicating the existence of a reciprocating communication or collaboration tie did not have any effect on the creation and maintenance of the other type of ties.

The direct cross-enhancement of these two types of networks can be further illustrated by the following example of the within sector (Civil Society) action of NGOLF.

The Case of Actor NGOLF

Throughout the recovery period, the actor NGOLF developed a collaborative relationship with one of the network actors (NGO33), which performed as a volunteer coordination service provider in the field of youth development in the city of Chengdu. Actor #33 was actually functioned as a collaborative program operated by a joint effort among the Communist Party Youth League, China Youth Palace Association, and the Hong Kong Youth Association. Therefore, the nature of formation for this particular actor did involve certain conduct of the state through local government. For example, the initial physical operational space of actor #33 was built through the approval of the local government in terms of the provision of designated building spaces and the supporting staff. However, the program had to reach out to other nonprofit volunteer social groups and organizations to perform and execute the part of service provision for the targeted local communities. As one of its many social service partners, NGOLF later established its collaborative relationship with actor #33 by providing the program with related educational classes. Other collaborative initiatives also included groups and organizations performing environmentally related activities. “It’s like they built the house and we fill in the content”, as described by the participant upon reflecting the characteristics of such a collaboration. On the other hand, participating in the program also provided valuable

networking opportunities for NGOLF to expand its connections with local schools and teachers. As a newly emerged civil society, part of the advantage of working with actor #33 was because its long established government-related background easily gained recognition among the public. Therefore, this kind of collaboration can be thought of as a mutually beneficial one[161]. The existence of their collaboration tie forged through joint operation of a program benefiting the targeted communities enabled actor NGOLF to develop its own expertise in youth development through building its own immediate communication and collaboration networks, such as with schools, volunteers, and other social service providers (shown in the red parenthesis in Figure 5.1.23). It also provided further opportunities for NGOLF to connect with others, such as actor #124 and #4. Figure 5.1.23 also provides a graphic illustration of the type of institutional arrangements that mapped out the possibilities of cross-enhancement of collaboration and communication network dynamics surrounding actor NGOLF.

[161] For detailed account, refer to Appendix 6.6.CaseNGOLF.4

Chapter 7

Civil Society, State, and Market System

Formation and Expansion of Available Capability Set

As both of the communication and collaboration networks experienced structural expansion in terms of size and intensity in connections, one capacity that the civil society actors learned to develop was their ties with the state and the market actors. The changes in the dynamics among these three domains, I would argue, can be thought as primary indicators that marked the independent functioning capabilities on the part of the Chinese civil society after the earthquake event. In this chapter, I explore this aspect of the picture in detail, particularly paying closer attention to actors' experiences qualitatively.

I start out with a discussion on the strength formation in terms of identifying the maximum flow measures among actors within the domains of civil society, state, and the market. Recall that actor #1 represented the state and was designed as an aggregate for all the government agencies that participated in the disaster response and recovery process. And actor #2 represented the market and designed as an aggregate for all the private enterprises inside the domain. Therefore, the results from identifying the maximum flow

for the state and market actors can only be interpreted as the number of different flow pathways that were available for all other civil society actors to reach out and pass information towards them, but not vice versa. This was because the two actors were set as not having any outgoing actions through the design of the original survey. This way, the flow measures presented here would function as an evaluation of the differing channels the civil society actors could communicate with these two actors. I argue that the dynamics of the changes developed over time can have significant policy implications for managing inter-sector relationships especially under extreme uncertainties like those after catastrophic disasters.

Pre-earthquake Stage

First of all, for the period before the earthquake, the ways that the state actor could get information from the existing civil society actors varied and there seemed to be many cases that the state could not obtain any information from or establish communication ties with those in the civil society domain. The highest number of flow paths from which civil society could reach to the state was generated from actors #137 and #51. Both actors had 8 intermediaries in flows from them towards the actor #1. In

turn, the state had 8 possible alternative channels from which to obtain information from actor #137 and actor #51.

After actor #51, the ranking is followed by the communication actions of actor #119 and #6. Both actors had 7 alternative routes to reach out to the state actor. From the action initiators' point of view, such a variety of opportunities for these civil society actors to communicate and pass information to the government agencies would put these actors in a relatively powerful position in the formation of structure resilience after a catastrophic disaster, upon considering the following conditions. For one, the exchanges of information and communication were in the nature of assisting the development of expertise on the part of the civil society actor. For another, the communication ties could opening up further opportunities for the actor to interact with other branches of the government agencies. From a policy-making perspective, the availability of alternative routes across a broader range of the remaining actors in the network would be more promising in understanding the institutional structure of civil society and thus designing relevant policies, particularly in preparing for the times of disaster response and recovery. However, for the period before the earthquake, the flow pathways of the network showed significant disconnectedness and there were large pockets of information disruption where numerous actors did not have any sources to obtain information from the rest of

the network. The vulnerability of such a network in terms of lacking agency activity on the part of civil society actors generated a kind of social structure with only a few key players who occupied the dominating positions in passing information and communicating with the state and the market actor. The rest of the actors remained "dormant" in action and were, to some extent, less aware of the possible opportunities that would have held when multiple neighborhood pathways could get them connected to the government agencies and the private sector. At the same time, the flow connections towards the business enterprises showed similar trend as that of the state. Only a few of the civil society actors established alternative routes to communicate with the private sector while the larger part of the remaining network remained in a state of lack of communication.

Emergency Response

This state of existence in connecting to the state and the market was completely changed shortly after the earthquake. Looking through the number of intermediaries that civil society actors had during the response period, not only the alternative routes for a particular set of actors grew by size, but also more actors across the remaining of the

network started establishing a variety of communication channels towards the state and the market actors. In turn, they (actor #1 and #2) were also able to obtain information from multiple pathways of the particular sources originated in the domain of civil society. During this period, civil society actors were actively building communication ties with each other and as a result of such proactive efforts, the government entities in the state actor were having increasing diversity of in-flow of information from a broader "spectrum" of civil society actors.

Actors #24, #3, and #34 had distinguished themselves by having significantly higher number of intermediaries when communicating with the government than any other civil society actor in the communication network. The alternative routes in flows from these three actors to the state went up to thirty-two connections. What this means is that upon building up connections with the state, these actors had a wide variety of opportunities to communicate with or making their voice heard through connecting with the government agencies. The failure of some information channels did not mean that the entire communication line between a particular civil society actors to the state actor was broken. There were abundant supplies of alternatives in the neighborhood of the focal actors that had the potential to pass the information along towards the target. In others words, the bond between the civil society actors and the state became more resilient to

shocks that tended to break the connections. The higher the number of mediums among pairs of actors, the more resilient the communication ties were to hold their place at times of social change or crisis. On the other hand, as civil society actors became more embedded within the network, the diversity of communication pathways from increasingly wide variety of sources also became more informative for the government to find policy measures to enhance the strength of bonds for purposes of disaster preparedness and mitigation. As actors in the civil society domain built each other up with the increasing number of connections among themselves, they themselves might not recognize the roles or positions that they occupy from the perspective of the whole network structure. It could be an opportunity for the government to step in to raise the awareness of civil society actors for their roles in strengthening the resiliency of the structure against future crisis. I now look at the interactions of civil society actors with the state and market from a number of civil society actors' perspective.

The case of Social Group Actor #3 (SG3)

For actor #3 in particular, although indirect communication channels were found to be abundant since its establishment after the earthquake, direct interaction and

cooperation with the Chinese government had been rare and one reason was due to the group's self-identified function as an "information platform"[162].

First of all, from the perspective of looking at the self-defined tasks positioned by the group as a whole, the nature of its functioning in servicing civil society groups/organizations in general did not provide many task intersections with those performed by the state.

> Since the very beginning of our work, the government must know about us, doesn't matter through which channel. They must have known what we were doing. But for the more direct contacts, such as those activities that would lead to working connections are very rare. And neither did we intentionally focus on this aspect of the work. As we have claimed to ourselves, our direct service is provided towards these NGOs and our work directly complements the government tasks. On a different level, we have not made direct contacts with any government branches. (SG3-01-16[163])

What is important to note is that the participant viewed the group's role as one that was complementing the tasks performed by the state after the event of the disaster. This implied a desire for this civil society actor to make a contribution to disaster relief by accompanying the efforts of those actions performed by the government. In other words, the role of the state was being respected, while at the same time, civil society actors were also keen on observing other aspects of needs for recovery in the society after the

[162] Refer to interview account SG3-01-15 in Appendix 7.1.01.

[163] For original Chinese script please refer to Appendix 7.1.02.

earthquake. Therefore, the interaction between SG3 and the state could be summarized as a "complementary" type and the origin of this dynamic was based on the definition of tasks being performed at each stage of time. Secondly, note that although direct collaboration with the state sector was absent, the information exchange communication tie with the government branches did exist at the emergency response stage. This means that there was a common awareness of the state recognizing the initial emergence of this civil society actor, and at the same time, the latter also functioned in such a way to facilitate and assist the duties performed by the state sector.

Aside from the types of direct and indirect contacts between the civil society actor and the state, another aspect of institutional development that could be thought of as "cross-sector" in orientation was the registration process through which the actors had to find their own "sponsors" inside the government. This aspect of relationship was peculiar to the Chinese context, especially during the process when informal social groups were trying to gain formal registration status. One of the biggest hurdles for group SG3 in its institutional development was not being able to obtain registration status, as was recalled by the young participant. This aspect of informality was perceived to be the key in the future organizational growth of the actor. The following was a direct account from the

young participant pointing out the key factor that prevented its group to establish such a registration relationship with the government.

> …we were right stuck at finding a proper sponsor. Looking at the type of work that we are engaged in, which directly servicing NGOs alone, according to the current NGO law in China, our work does not belong to the usual categories servicing disadvantaged groups such as elders, disabilities, children, women, or the common field that NGOs regularly engage in, such as environmental protection. So, we could not find a sponsoring unit. Or more precisely, no one would be willing to. This is a big problem for us. We even asked the Red Cross, and they had never sponsored anyone like us, nor did they have any conceptual clarity of sponsoring any kind of civil society organizations. Back then, it was me and G (SG3-03) went to see them, and in order to help us, they did even prepared a report asking about our case, but none of us ever got an answer until now and it became a pending issue now. They (government) won't provide us with a definite answer, nor did they tell you yes or no, rather, they just hang us waiting indefinitely. At last, we came to the Academy of Social Sciences here in Chengdu, the experience became even more bizarre. They have never heard such a concept before and would like us to help them draft a set of administrative measures in managing civil society organizations. In other words, we had to draft some guidelines to manage ourselves. If they don't even have these kind of things, there is no need to even mention the work function matters. If you ask me and G how shall this issue be resolved, so far, we don't have answer yet. (SG3-01-17[164])

The problem of finding an appropriate "sponsoring unit" within government branches partially arose from the group's self-defined nature in servicing other civil society groups/organizations. From the experience of SG3, there were three possible sources that tend to act as institutional obstacles. One was from the legal point of view. The targets

[164] For original Chinese script please refer to Appendix 7.1.03.

that the group was trying to provide services towards could not be appropriately categorized as any one of the common service types among "NGOs" functioning up until the disaster event. The second factor was related to those organizations that actually did qualify for being a sponsor, but with a lack of understanding in both the meaning of "civil society groups/organizations" as well as in the practicing experience of actually being a sponsor. The fact that the Academy of Social Science was asking the participants of group SG3 to draft a set of rules in administering civil society organizations exemplified a primary need for formal rule-based institutions to be aware of and recognize the functioning of the various forms of institutionalization dynamics among the group/organizations inside the civil society domain. On the other hand, this also represented the challenges faced by the Chinese institutional system in the aspect of governing the emerging processes of civil society, both in terms of formal organizations and informal social groups, in order to learn and adapt in cases of social change after catastrophic disasters.

"According to the traditional survival and funding modes of Chinese civil society groups/organizations, or more precisely one could also say those based on historical cultural practices, we (SG3) are unique in a sense that nothing with similar nature and functions of this group ever existed and thus were not supported (by the state). Thus in

other words, our work compensations are not being supported"[165] (SG3-02). Notice that the participant referred to the functioning and funding practices for Chinese civil society organizations as a type of tradition that can be passed down by culturally accepted habits. From an institutional perspective, such was a conceptual identification of institutions through which Chinese civil society groups or organizations' made their existence as one belonged to cultural practices rather than institutions as formal rules. The senior participant provided his interpretation regarding the institutional source of the group's registration obstacle as follows:

> Therefore, many issues related to our work still remain. The field of Chinese civil society has just begun its journey. The related institutions are almost non-existent, or there are no laws or legislations in this regard. Neither the operational mechanism has been properly established so far. How could there be implementation mechanisms if there are no institutional rules. Therefore, this created the problem of non-standardization. Such is not referring to the non-standardized actions of any one specific organization, but I'm referring to a phenomenon that is happening to the entire field. We are functioning and developing the field under a condition where there are no rules or standards, and neither does any evaluation criteria exists. Besides the hurdles that I mentioned to you now, there must be many more. If you go to another place, they probably will tell you another set of problems. This would mean that the field is not standardized, or there are no rules to follow. If there are rules of conducts for certain things, their institutions would be complete, and the implementation mechanisms would be complete, the functioning would be effective. And if all of these are in place, the rest will be simple…I will do whatever I will have to do

[165] For Chinese version, refer to Appendix 7-1-04. Also see Appendix 7-1-CaseSG3-5.

> and you do whatever you have to do. Then I can execute my accountability. But for now, we don't have anything in place. This is the current situation now. (SG3-02-04)

As we can see, one of the fundamental issues facing civil society actors, particularly one like SG3 whose functioning areas were not yet clearly being recognized and incorporated into the rule-based institutional operating mechanisms of the country, created a certain degree of confusion in terms of the group's informality status. At the same time, what could be reflected in terms of the growth of emerging Chinese civil society actors was one that characterized by actors being increasingly aware of their institutional environment and a desire to be recognized by the state through their rule-based responsibilities and duties. Despite of difficulties in functioning in an institutional climate in relation to the state actor, the participant's agency drive to make a contribution for the "betterment" of the society provided a backbone source for continued action in the civil society domain. As he put it as part of the group's struggle to survive,

> …so in fact, hardships at work still amount and will be to a great extent, but regardless, we rely on our own ability, on our confidence in being able to servicing the society, and on all these kinds of dedications… (SG3-02)

The Case of Actor #24 (NGO24)

From the findings in the communication network flow measures, actor #24 was one of the civil society actors having established high level of communication relationships with both the state and the market sectors immediately after the earthquake event. The director of the NGO further revealed the specific types of these connections. For the connections with the state sector, he (NGO24-01) described that two kinds of the state involvement could be distinguished. One was at the different levels of government branches, such as at the levels of provincial, regional, city, county, and township. The other was separated by various kinds of functions performed inside government branches, such as ministry of forestry, environment etc. For the connections with those inside the market domain, one type of relationship was with foreign companies operating inside China and the other one was with domestic private enterprises. From here, we can see that the actor had established a rather broad cross-sector base to develop its communication and collaboration connections with the various levels of actors inside the state and the market sectors. This piece of information was significant in designing future network studies when investigating detailed connections between civil society actors and the different kinds of state and market actors. Although the current study treated both state and market as two aggregate entities performing the role of network actors as a

whole, further breaking down and looking at the specific composition of sub-level actors inside the state and market domains were needed in order to provide a thorough understanding of the nature of the dynamics among the civil society, the state, and the market domains.

Looking forward in terms of the future works of the NGO actor #24, the director expressed his hopes for further "policy coordination" from the various branches inside the government for the development of grassroots civil society actors. This desire in looking into the positive changes in the larger institutional environment also arose directly in relation to the field of activities that the actor chose to engage in. For example, he particularly pointed out the specific needs of attention be paid from the ministry of forestry, environmental protection, and tourism. On the civil society side, the role for information exchange platform was emphasized to be critical in facilitating the collaborations among peers in the civil society domain. He envisioned that through the assistance of such as a platform, the initial coordination and the later development of collaboration dynamics between foundations and NGOs, as well as among NGOs themselves could be facilitated and sustained over time[166].

[166] For details, refer to Appendix 7.1.CaseNGO24.5.

The Case of Actor #123 (SG123)

Among the newly established civil society actors shortly after the earthquake, actor #123 quickly developed more intermediary communication ties toward both the state and the market to a level that was comparable to its registered organizational counterparts at this period of time. The source of the cross-sector initiatives being activated around this actor was explored further.

From 2009 to 2011, the organizer recalled that there were several private enterprises that had showed interests in financially supporting the group. The exact functioning mechanism of such interaction was in the form of businesses providing funds and the group would execute the programs according to the needs in the field. Up until the time of the interview, these kinds of programs operated in a way that the group provided training for teachers across all the middle school and elementary school in the city of Dujiangyan to learn psychology-related topics. Regarding the group's specific interactions with the government, the organizer re-emphasized its role in "bridging" the communication channels between the mass the government. Just as SG123 said: "we (NGOs) function as an intermediary that ease up the frictions between the two" (SG123-01-04[167]). Note that the informant specifically distinguished the function of group actions

[167] For Chinese script, refer to Appendix 7.1.04.01. Other details refer to Appendix 7.1.CaseSG123.5.

of actor SG123 from that of the general public. And the dynamics between the state and the mass was perceived to be a somewhat frictional one. The role of the civil society actors, on the other hand, was perceived and preferred to be detached from both the state and the general public. And only through such a realization would the civil society fully establish its functioning. Such envisioning would partially explain the actor developing an increasing number of intermediaries to diversify its communication channels to the state and market actors.

In the policy-making arena for disaster preparedness, for example, the particular position for actor #3, #24, #34, and #123 after a disaster can be singled out as a case to look deeper into ways of designing interventions to boost the information flow across the entire network. Since each one of first three actors had thirty-two medium flow pathways that connected them to the state agencies during the response period, one could examine who these mediums were, their registration status, location, and field of expertise in order to categorize what types of relationships they have with the government agencies. How the three actors got connected with the intermediaries in the first place can also be informative in tracing the origin of structuration of ties over time. These understandings altogether can build up the foundation of developing policy tools that can enhance the capability of other actors in the network to connect well with others as well as to the state

agencies. At the same time, by doing so, the state could also increase the pathways for it to obtain information from the civil society actors. This is particularly critical during the period of emergency response after a disaster. With a well-connected network structure built in place, the availability of alternative connections for pairs of actors will provide a "shield" in making communication occur in time and information passed accurately throughout the network.

Long-term Recovery

During the long term disaster recovery period, the general structure of the flow pathways among pairs of actors maintained their dynamics from the previous emergency response period. Civil society actors remained to be active in building up communication relationships and continued to be less dependent on just one or two alternative routes to reach out to their target actors. Actors had kept establishing themselves with a wide variety of medium connections. Actor #51 had a total 28 pathways to communicate with the state, which immediately followed by actors #3 and #32. Actor #3 remained to have the highest number of pathways to reach the state by having 31 alternative routes. Actor #32 and #6 emerged as having the next highest number of pathways towards the state.

The overall structure of the recovery communication network tended to follow similar patterns of resiliency in terms of information flow as that of the period before. This can be interpreted as a signal of the level of motivation from the civil society actors' side. From the policy-making perspective, this stage of the post-disaster relief process also signified an active invitation from the part of civil society to become part of the policy-making process that could facilitate the institutionalization of the tie connections. In this case, the construction of "resiliency" did not only have to be a one-way route for government to design what should be "best" for the society to withstand periods of dramatic change or catastrophic crisis. The process can also be "home-grown" from the society's end and such bottom-up dynamic would have the capacity of being endured over time because a sense of desire for agency action became the primary sources and motivations. For such incidences, the structural resiliency would thrive in policy environments that took into account the efforts from both the actors of civil society and the role of the government for long term disaster mitigation. In the following paragraphs, I use the examples of actor #51 and #97 to qualitatively illustrate how agency desires could be understood.

The Case of Actor #51 (NGO51)

Interaction with the State Domain

The interactions with the state sector were perceived as a critical factor for the projects implemented by NGO51 during the disaster recovery stage. The most direct support that the actor received was the provision of the physical activity space for the sixteen community service center locations. According to the program officer (NGO51-01), this did not just include the location itself, but most importantly the permission to use the buildings and the rooms free of charge. "This in fact was a significant kind of support. At least when we went negotiating them, they were willing to provide with these basic facilities[168]" (NGO51-01).

One other kind of support that the program officer would most want to see was the institutional support provided by the government. Recognizing that efforts of this kind would take time to take effects, the actor's position in the role of the government is revealed as follows:

> What we would hope to see the most is some kind of institutional support on the registration of civil society groups. This is one factor that is relatively difficult for them as of now. Whenever we are having discussions with local governments about our programs, we will always mention our hopes for a more relaxed registration system that can facilitate the process. They might say that they would

[168] For further account, refer to Appendix 7.1.CaseNGO51.5(1).

> consider it. But you know this, this is not something can have observable results in a short period of time. So what we can do is to 'dig' slowly and work on it gradually. (NGO51-01-13[169])

Interaction with the Market Domain

The market sector in this case, played an active role in building collaborative interactions with NGO51. In fact, the finances of all the sixteen local community service centers were supported by private firm N, a well-known global enterprise in the mobile phone industry. It was actually the firm that first initiated its contact with NGO51 to communicate its intention in making a collaborative effort in the area of disaster recovery. The specific factor regarding actor NGO51 that attracted the firm's attention lied in its original model being practiced in Shanghai before the earthquake event. The uniqueness of the model was its flexibility in drawing together the resources from different civil society actors as grassroots "social organizations" to implement community service programs.

> Back then, we were doing works related to community services in Shanghai, they (N) saw that our Shanghai model worked out very well. Our main work there was to build community service platform. There are currently a lot of community service centers, but many were led by the government, such as entities like the residential committees. The government provided us with permission to use certain available spaces, and would delegate the management power to us. Since we do have these permissions to manage things, we will introduce various kinds

[169] For original Chinese script please refer to Appendix 7.1.05.

> of local civil society organizations to come in and implement activities….this is why (N) started to inquire us about the possibility to build such a community service platform in the disaster areas as well. (NGO51-01-14[170])

From the participant account of NGO51, I summarized two traits of the role of the market sector. One was that although limited by the network analysis design of this research in revealing the outreach ties originated from the market domain, the qualitative examination showed that actors in the market system were actually active participants in building collaborations with civil society actors. Second, their desire to perform social responsibilities after the disaster did not end with simply providing financial support to the more grassroots civil society actors. A genuine concern for the long term development for the local communities and the participating civil society actors was also taken into their decision-making process[171].

The Case of Actor #97 (SG97)

Observing across the three periods before and after the earthquake, the number of cross-sector intermediaries that actor #97 created quickly rose from only 3 toward the state and market domains to 20 and 19 toward the two respectively over the long term recovery stage.

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[170] For original Chinese script please refer to Appendix 7.1.06.

[171] For further account, refer to Appendix 7.1.CaseNGO51.5(2).

For the case of this actor, one of the primary forms of institutional development in terms of cross-sector interaction was realized through financial mechanisms. And the sustainability of such a mechanism in place constituted as a critical factor in the "long term survival of most NGOs" (NGO97-01). The actor particularly focused in community health development, thus long term financial support beyond the one-year mark would be important for its action to take effects inside the communities. In fact, according the organizer, "one year (of funding) is definitely just a beginning. Especially for health-related activities, the availability of at least multiple years' of stable support is a must in order to observe change" (NGO97-01). Because of the type of service being chosen, the kind of support from foundations would result in "short-term effect" as they often will be terminated in a year's time. The support from private enterprises would also involve a sense of instability as the funding depends on the operational situations and the directions of the business goals. Essentially, the types of supports from foundations and the market actors were not perceived to be "sustainable and stable" sources.

> So the only long-term alternative (for funding) might be on the government side, and if it would be committed to support us in the long term. This kind of support would have to rely on how they think of our work and their ways of conducting their work in terms of the degree of recognition and support. (SG97-01-11[172])

[172] For original Chinese script please refer to Appendix 7.1.07.

As we can see, the role of the state, from the perspective of a civil society actor, was one that could fulfill the function of being the critical source of its functioning stability. However, one important format of the type of support that could be provided by the state sector was expected to be coming from its "recognition and ideological support" for the works of NGOs. Note that such a position being claimed by the organizer of actor #97 could be attributed to two types of the possible transformations inside the civil society domain after the crisis. One was the growth of civil society actors in looking at themselves as playing a "standing up" role in proactively making contributions to the larger social "resiliency" of the country against future risks and crisis situations. Secondly, the desire for the civil society actor to be known and understood by the state actors reflected a needed re-evaluation of the nature and activities of Chinese civil society particularly after the 2008 disaster. Therefore, comparing the institutional changes made inside the civil society domain before and after the earthquake would contribute as valuable cultural basis for future policy designs preparing the society for future disasters[173].

Similar to the nature of cross-sector interaction between actor #49 and the state actor, the dynamics that actually contributed to the connection between actor #97 and the

[173] Further account refers to Appendix 7.1.CaseSG97.5 (1).

state was one of latter's "recognition and acceptance" of the activities conducted by the civil society actor in the field. Such awareness on the part of the state as a type of showing its indirect permission towards the functioning of the actor, from the perspective of the civil society actor, was an alternative way of the state's provisioning of open "opportunities" for it to exercise its envisioned functionings. To put it in the words of the organizer:

> It is already such a great improvement when it (local government) actually allowed us to do it. If they accepted you conducting this field of work, that already indicated their recognition. This is because they could also prevent you from doing it, and if that is the case, what can we do? So, since they provide you with permission to do this, it would indicate the availability of some open opportunities. And that is good. There were many times when we were organizing activities at the local communities, and it is the government that provided us with spaces for our office work and activities. All of these were types of supports. (SG97-01-12[174])

Note that the permission to offering the usage of office spaces and public spaces was perceived as an important form of support from the state actor. This was perceived as a culturally unique form of cross-sector "collaboration" as there were not a set of institutional rules guiding the specific actions that needed to be taken on the different sides of actors. What could be inferred was that in a cultural context where the civil society domain was emerging and beginning to take shape in both actions and

[174] For original Chinese script please refer to Appendix 7.1.08.

interactions with the state, the forms of connection-building between actors inside civil society and the state could take a variety of supportive channels. For example, in the execution of one of the community development projects in the outer suburbs of Chengdu, at the same time that actor #97 was collaborating with other NGOs performing health-related tasks, the spaces for carrying out the needed activities were provided by the local government. From the perspective of civil society actors, this form of support was further interpreted as their "collaboration" with the state sector[175].

In terms of the interactions between actor #97 and private enterprises inside the market domain, the existing collaborative relationship for this particular civil society actor was originally established for the purpose of providing educational support for children in the disaster areas. The project was first initiated by the private enterprise and the role of actor #97 was one to assist the implementation in the field. However, such communication and collaboration relationships with the market sector were not set as its primary functioning focus as compared to its newly start-up program in health-related community developments, which was supported by actor #51. Although actor #97 was not involved in any cross-sector project with actors from all three domains joining

[175] Details refer to Appendix 7.1.CaseSG97.5(2).

together at the same time, the organizer provided her own vision of how a formal "collaboration" can be defined[176]:

> Currently, we are only collaborating with either one side or the other, but haven't worked with the two sides at the same time yet…but the ones we have are not in terms of in-depth collaboration neither. We don't have any of those kinds of collaborations as of now. ****seemed to have done some good works in this regard, the government was providing the funds, private enterprises are participating, it's like all sides are putting into financial and human resources to execute the process. I think this should be the authentic collaboration process when everyone truly took part in it, participate in joint discussions and implement the plans together. (SG97-01-13[177])

In summary, actor #97 generally perceived its own functioning after the earthquake as one that was complementary to the state actions. As a newly formed grassroots, it yearned for stability offered by the process of institutionalization. At the same time, it also recognized the significance of its own capacity development over the longer term in order to make a contribution to the social resiliency of China since the earthquake. The connection to the state, from the perception of actor #97, became the key factor in reaching both functioning stability and growth. The actor not only desired to be known and understood by the state, but also proactively built communication ties toward the state with a long-term orientation.

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[176] Details refer to Appendix 7.1.CaseSG97.5(3).

[177] For original Chinese script please refer to Appendix 7.1.09.

The Case of Actor NGOLF

The consideration of functioning stability in relationship to the state like that of actor #97 was also resonated by the experiences of actor NGOLF. From the key participant's (NGOLF-01) account, its registration status was assigned by the office managing civil organizations within Chengdu's Municipal Civil Affairs Bureau. This made the actor the first nonprofit registration certificate given to a civil society organization permitted to perform without the existence of a sponsor work unit. And it was at the time transitioning from a disaster recovery-oriented organization to one that conducts regular social work activities under "normal" conditions. To the participant, this showed a "gesture" on the part of the government, that at least "it would like us to conduct out activities by becoming public, under its general supervision and acknowledgement". Although admitting that there were still gaps between what the civil society actor hoped for in an ideal institutional environment provided by the government, the overall climate at the time as compared to before, was "much better" from the perspective of the participant[178].

[178] Details refer to Appendix 7.1.CaseNGOLF.5.

Clustering across Civil Society, State, and Market Domains

Besides the increasing opportunities for civil society actors themselves to be engaged in their local neighborhoods, I also investigated the clustering behaviors of civil society actors around the state and the market[179]. Recall that neither of these two actors had any outgoing connections but only incoming nominations from the civil society actors. From a policy-making perspective, the node level clustering coefficients for the two actors can be singled out as indicators reflecting the tendencies for civil society actors to form clustered neighborhoods. The more tightly weaved-together the local neighbors for the state and the market actors, the easier and faster the information exchange, which is a critical factor in designing timely cross-sector initiatives when providing assistances in response to the disastrous impact of the earthquake.

Based on the incoming nominations that constructed the immediate neighborhood of the state actor, there were a total of 496 pairs of actors or possible ties within its neighborhood immediately after the disaster event. And 15% of all the possible ties among these neighbors were present. Compared to the period before the earthquake, its number of pairs of neighbors increased almost ten-folds from 55 to 496. It means that the

[179] See Appendix 7.1*A, B, C* for UCINET clustering output measures.

crisis situation not only brought forth the emergence of more actors in the civil society but also an increasing level of recognition to see the state as an important communication partner, especially after the earthquake. Over time, the size of the state actor's local neighborhood stayed at somewhat the similar level with a small amount of drop of ties to 465 ties. However, the percentage of all these possible ties that actually presented during the long-term recovery stage went up from 15% to 18.9%. On the one hand, this demonstrated that the civil society actors' willingness to keep the enduring communication ties with the state actor both short term and long term after the disaster. On the other hand, the signs for an institutionalization process in terms of dyadic tie-building among pairs of civil society actors ensured the state actor to be embedded in increasingly higher clustered neighborhood. This type of action could be understood as a representation of trust on the part of civil society actors towards the state in times of turbulence and this type of effort did not fade away over time. There was a genuine tendency of endurance of these clustering neighborhood relationships, which signified as a sense of willingness to institutionalize the structure of embeddedness from the perspective of civil society actors.

What then, were the opportunities for change for the state actor in this context? For planners and policy makers who are designing the various ways to involve the civil

society especially at times of uncertainty or after catastrophic disasters, the behavioral change of actor neighborhood clustering among civil society actors could offer clues targeting a variety of channels to generate information exchange throughout different network environments. Specifically, the attributes of those initiated the sustained structures of clustering within the state's local neighborhood can be traced. This can be followed-up by interventions developed to target the key actors in building up the communication connections, thus forming efficient ways for the state to exchange information with those in the civil society domain.

The market was perceived to be another critical player in the disaster response and recovery context. Before the earthquake, the actor as a whole had only 10 pairs of civil society actors within its immediate neighborhood. And out of these 10 possible ties, 30% were actually present. In other words, few civil society actors saw the private enterprises inside the market system as a critical communication partner before the earthquake. This attitude changed drastically after the disaster, when the size of the local neighborhood for the market actor increased almost twenty-folds from 10 to 231 ties. At the same time, the percentage of all these possible connections that actually presented only dropped by 7.5% to 22.5% at the emergency response period. This means that from the civil society's perspective, the communication and information exchange ties with the

private sector in the market domain were recognized to be critical and the businesses themselves were being embedded in increasingly clustered local neighborhood. Over the long term recovery period, the size of its immediate neighborhood dropped to 171 pairs of civil society actors. But the realization of actual tie presentation among these actors increased to 26%. Those who had direct ties with the business sector were increasingly clustered together with each other and the result of this process was that the private sector being gradually embedded in highly clustered neighborhood. This point can also be demonstrated by looking at the network graphs comparing before and after the disaster.

Examining figure 7.1 for communication network before the earthquake event, we can see that actor #2, the aggregate of private businesses (circled in brown color), was located near the edge of the densely clustered section.

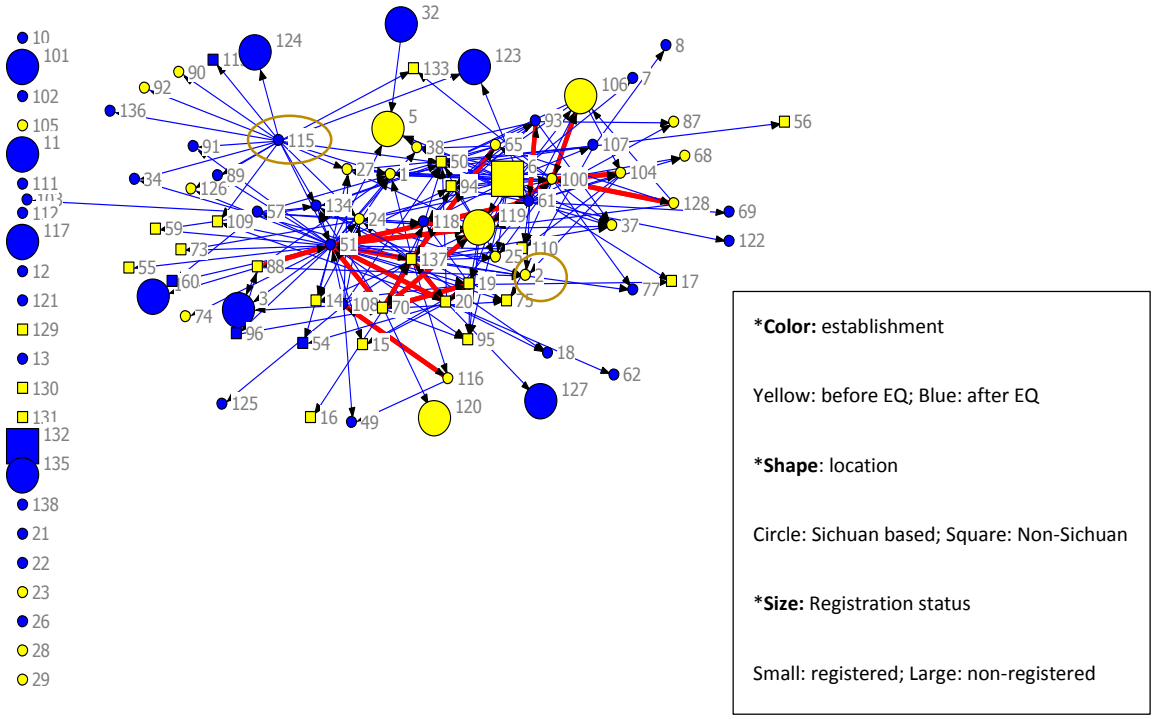


Figure 7.1. Pre-earthquake Communication Network (Actor Attributes in Date of Establishment, Geographic Location, and Registration Status)

The figure provided a visual demonstration that the actor was nominated by relatively few civil society actors at this stage of time but those who made it into the actor's local neighborhood were relatively highly clustered. The result of such embeddedness in the local structure was that the private sector had some connections to the clustered core of the network but was not recognized as a key player. Another characteristic of this graph that is related to the area centered in actor #115. Recall that the actor made a lot of effort in initiating ties to others and created a relatively large local neighborhood for itself. This was the reason that we observed the "star-like" feature of its connections with the actors in its immediate neighborhood. However, the neighbors themselves were actually not that

well connected with each other at all. Almost half of the actor's (#115) ties were made towards those actors whose only connection was to actor #115. Approximately the other half of its ties actually facilitated actor #115 to build communication relationships with some of those inside the densely clustered section of the graph. For policies that are intended to bring more those civil society actors who are relatively less engaged in the communication network, or on the periphery of the network "closer" to the information exchange activities among those who are embedded in the highly clustered section of the network, actor such as #115 was unique and critically important in making such a connection. For actors #136, #92, #90, #113, and #124, the only way for them to be informed of what's going on inside the densely clustered part of the graph was through actor #115. Therefore, this actor was an important intermediate for information to spread throughout the network.

Observing the distribution of the actors shortly ad long term after the earthquake (figures 7.2 and 7.3), the most distinguishing feature one can notice is the inclusiveness of the network with the disappearance of the "isolates" from the previous period.

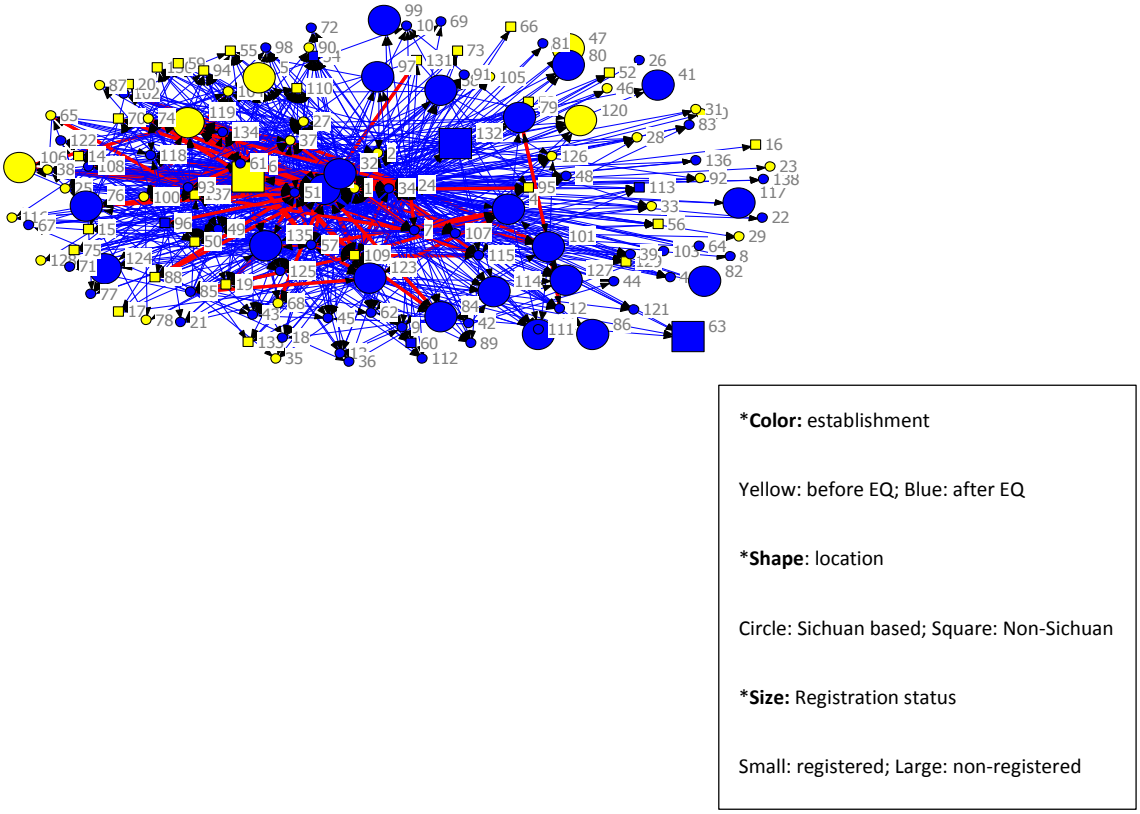


Figure 7.2. Emergency Response Communication Network (Actor Attributes in Date of Establishment, Geographic Location, and Registration Status)

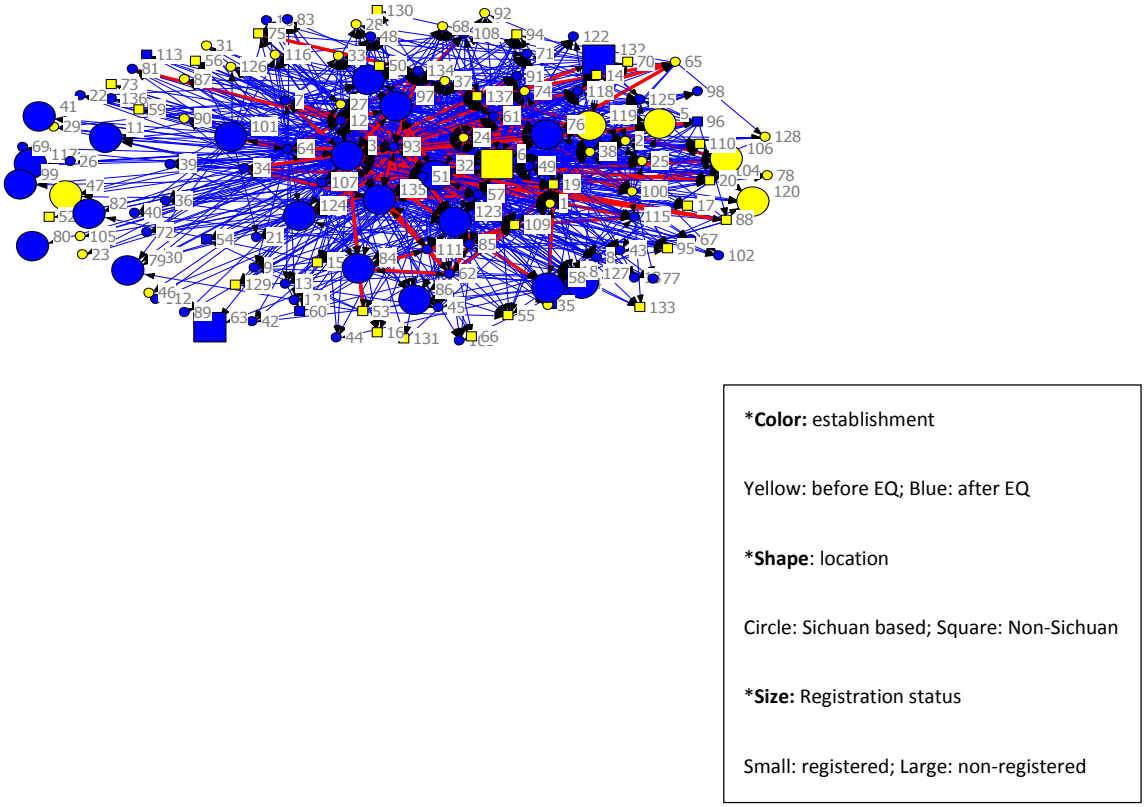


Figure 7.3. Long-term Recovery Communication Network (Actor Attributes in Date of Establishment, Geographic Location, and Registration Status)

The overall structure itself also became very tightly knit together. The state and the business actors (#1 and #2) were becoming more embedded at the center of the cluster. Their embedded positions remained during the long term recovery stage (see figure 7.3) while being closely tied to some of the key civil society actors in the highly clustered neighborhoods. Therefore, the experiences of the state and the market could be generalized as one that turned from lacking attention from the civil society actors before

the earthquake to one that was being perceived as important communication partners to be drawn into the institutionalization process of relationships among civil society actors.

Registration Institutional Status and Cross-sector Dynamics

Cross-Sector Communication Networks

Pre-earthquake

I now investigate the internal and external-group ties built by civil society actors with the state and the market sectors. Recall that the study was originally designed to emphasize the actions of civil society actors, the ties that were connected to both of these two aggregate actors were taken as approximations of how actors in the civil society domain perceived and built their communication and collaboration ties towards the state and market. As a general observation from table 7.1, the total number of ties for government agencies and private enterprises, regardless of in or between groups, were relatively small compared to the actions inside the civil society domain discussed earlier.

Table 7.1. Communication Network Pre-Earthquake Inter-sector relationships

	Internal	External	Total	E-I
State	8.000	3.000	11.000	-0.455
Market	3.000	2.000	5.000	-0.200

Again this confirmed that the communication connections towards the state and the market were not as prevalent as those among civil society actors during the period before the earthquake. This suggested that the state and the market domains were operating in a highly detached manner from the civil society domain at the time. Further examination of the internal and external ties for the state and the market also indicated that registered actors were more likely to initiate communication ties or exchange information with government agencies and private enterprises. Overall, there was a very loose communication attachment between the civil society and the two aggregate actors. This kind of state-market-society arrangements contains information flow only among the actors within each of the domain itself rather than promotes exchanges across sectors. As a result, neither the state nor the market actor had enough information channels built to understand what was going on inside the civil society. This is not an ideal type of cross-sector institutional arrangement particularly for a society to deal with incidences of dramatic change, such as one triggered by catastrophic disasters.

Post-Earthquake

I now look at the inter-sector relationships among the civil society, the state, and the market exemplified through the actions taken by the civil society domain after the earthquake. Note that in the context of this study, the registration attributes for both the state actor and the market actor were originally coded as registered. Therefore, the group internal ties that were linked to them were actually initiations through registered actors and the external ties would have to be initiated by non-registered civil society actors. For the emergency response period (see table 7.2), both the internal and the external ties for the state and the market increased as compared to before the earthquake.

Table 7.2. Communication Network Emergency Response Inter-sector relationships

	Internal	External	Total	E-I
State	21.000	11.000	31.000	-0.313
Market	16.000	6.000	22.000	-0.455

Table 7.3. Communication Network Recovery Inter-sector relationships

	Internal	External	Total	E-I
State	22.000	9.000	31.000	-0.419
Market	13.000	6.000	19.000	-0.368

During the recovery stage, government agencies in the state domain had more group internal ties (22) than group external ties (9). This means that more registered actors tended to be attracted by the state than those unregistered actors. In other words, the

informal groups reached out relatively less for the state to develop communication and information exchange ties. There was a similar tendency for the ties built with the private enterprises (13 internal ties and 6 external ties).

Looking at the actor level E-I index for the two aggregate actors, the measure for the state was -0.313 and the measure for the market was -0.455 for the emergency response stage. Thus, both state and market actors had certain degree of tendency to attract ties from registered actors. But the state actor had relatively less tendency towards group closure with registered civil society actors than the market. During disaster recovery period, the E-I index measure for the state actor went from -0.313 to -0.419, while the intensity for group closure for the market actor decreased from -0.455 to -0.368. Thus, over time, the market actor tended to have less in-group closure while the state actor continued to draw attention from the registered ones. Therefore, the general characteristics for inter-sector communication based on the registration status condition was one with increasing tendency for ties between registered civil society actors with the government agencies, and with decreasing tendency for private enterprises to have ties with registered civil society actors. The policy implications for such results can be two folds. One is that the index measures here can be used as suggestive indicators signaling the behavior of the different groups within the civil society towards the state during

periods after a disaster. In the Chinese case, attention had to be paid for government to build further ties with those informal and non-registered groups. Information exchange activities with the registered and the non-registered group actors are equally important as the two groups might be occupying different areas of expertise as well as location practices for the disaster-impacted communities. The other point is that the private businesses seemed to be gaining attention by more non-registered civil society actors over time, especially into the disaster recovery stage. The factors that contributed to building such attraction can be identified and incorporated into the future policy designs in terms of forging stronger information exchange ties between the market system and the civil society for periods of long term disaster relief.

Cross-sector Collaboration Networks

Having examined the communication network, let's go one step further to observe what happened at the cross-sector level of the collaboration network over time. The following tables (7.4, 7.5, and 7.6) depicted the actor-level variability in group closure regarding the collaboration relationships of these two actors.

Table 7.4. Collaboration Network Pre-earthquake Inter-sector relationships

	Internal	External	Total	E-I
State	6.000	4.000	10.000	-0.200
Market	4.000	2.000	6.000	-0.333

Table 7.5. Collaboration Network Emergency Response Inter-sector relationships

	Internal	External	Total	E-I
State	16.000	8.000	24.000	-0.333
Market	9.000	5.000	14.000	-0.286

Table 7.6. Collaboration Network Recovery Inter-sector relationships

	Internal	External	Total	E-I
State	18.000	8.000	26.000	-0.385
Market	8.000	6.000	14.000	-0.143

Recall that any of the collaboration ties that the two aggregate actors had were actually being nominated by the civil society actors. This feature when being applied to observing the processes of network structural change in this research context, was used as a tool to interpret behavioral changes of civil society actors towards the state and the market.

Before the earthquake, we can see that the un-scaled E-I index measure for the state actor was -0.200 and -0.333 for the market actor. This suggested two sides of the story. One was that both the state and the market tended to have a mild level of group closure with registered civil society actors, with the market having a relatively higher tendency for building collaborative projects with registered actors. Shortly after the

earthquake, the degree for registered civil society actors to be associated with the state for project collaboration increased while the degree for the market to have group closure decreased to -0.286. Both the state and the market still had tendencies towards group closure shortly after the disaster. But it seemed that there was an increasing degree of variability on the market side towards building collaborative projects with non-registered actors. This inferred that during the short term response stage, the inclination of market entity to collaborate with only registered civil society actors receded. Such could be a signal showing that for those non-registered civil society actors, their awareness of the importance of finding project collaboration relationships with private enterprises increased. Throughout the long term recovery stage (see table 7.6), such trend persisted and endured. The tendency for the market to have collaboration ties with registered civil society actors turned out to be even less than the emergency response period. The state actor seemed to be consistently gaining attention from the registered actors in the long term disaster recovery phase. This evidence showed that there was still room for the state to build collaborative ties with more non-registered civil society actors to facilitate their long term development. On the other hand, it was encouraging to find that the collaboration initiatives between the market and the grassroots social groups were blooming. This was in accordance with the motivation and commitment side civil society

actors at this stage of time. In the Chinese context, when it comes to developing sustained efforts in making a contribution to the disaster recovery process, it was not just the actors' motivations and the commitments that count, the collaborative relationships with both the state and market actors were important for civil society actors when facing long term growth. Here, I use the example of actor #49 to illustrate this point.

The Case of Actor #49 (NGO49)

For the case of actor #49, a proto-type of cross-sector collaboration was made possible through one of its community development projects implemented in one of the disaster-impacted cities. Such a cross-sector initiative was named as "government, private enterprises, and NGOs three way collaboration model" from the account of the organizer (NOG49-01). In the project, the collaborative efforts was implemented by government providing the permission to use the land, a private enterprise supported the financial means to build a community center, and actor #49 was responsible for executing the project through the operation of the center. This model was first implemented in the city of Shifang, and then further being "copied" in another community development project in Dujiangyan through the funding of a cellphone carrier functioning as the private enterprise. Essentially, the key motivational driver for this mode of cross-sector

collaborative initiative was one that emphasized on the role of the NGO actor exercising its specialty in providing social services promoting community development. The role of the state and the market were considered to be more of a supportive type to facilitate the functioning of the actor #49. Since 2008, as recalled by the organizer (NGO49-01), the actor #49 as an organization had provided social services through this cross-sector model at a regional level every year.

> We started this project since 2008, and it has been a quite successful one. This is also a good collaboration model. As of now, our headquarters has already moved to Shifang, and the new office building has being completed and current in use. The usage of this land is also permitted by the government. Every year, we will conduct social service related works within the entire region every year. I think this was a relatively new model, with private enterprises providing financial support in the backdrop. (NGO49-01-07[180])

From a long term recovery perspective, this particular model of cross-sector collaboration had transitioned into sustained type of institutional interaction among the actors from the three domains as the NGO's headquarter relocated to one of the project areas. Note that the characteristic of this kind of institutional development did not originate from a ruled-based initiative, meaning when the organizational actors inside the civil society, the state, and the market domains came together with a clear pre-set idea of the specific structure of the collaboration designed by a fixed set of rules and guidelines. Rather, the

[180] For original Chinese script please refer to Appendix 7.1.10.

mechanism arose from the field of practice based on the particular cultural and social contexts. Culturally, in China, the ownership of the land belonged to the state and any actions taken on top of it, such as the construction activities for different types of usage purposes would have to take into account of getting permission from the government, or other words, developing interactions with the state. This process had become so sedentary that the NGO actor would consider it a norm inseparable from its field practices[181].

Institutionalization, in this cultural context, originated from what those activities perceived as norms of practices. Socially, the role of civil society, as compared to those functions performed by the state, was traditionally a "weak" one in terms of both diversity and quantity. After the earthquake event, however, the group/organizational actions taken by civil society actors showed primary signs of their capability in "complementing" the tasks performed by the government in crisis response and recovery situations. To civil society actors themselves, their actions in building up opportunities to develop specialties in the social aspects of recovery, such as community services, were therefore perceived as a role that was "new" and "interesting", particularly this role allowed the civil society actor to take actions at the forefront of managing the execution of this kind of cross-sector projects. Overall, the institutionalization process of this type

[181] For an elaborated account, refer to NGO49-01-08 in Appendix 7.1.11.

of inter-sector interactions arose from not only civil society actors having the awareness of cultural environments where traditional roles were being formed but most importantly, taking further actions to venture into new social responsibilities as prompted by the crisis event. In the case of actor #49, this type of culturally-based and socially-enacted cross-sector initiative also had its own perceived advantages. For instance, the organizer began to see its responsibilities as part of the development of "roles" in relation to actors in the state and the market domains:

> …I think constructing a platform from the efforts of these three parties, with each party playing a different role, putting in its own resources, to serve the entire region. This is a kind of framework. The government rarely would provide financial support. They surely can provide land resources, coordinate some relationships, those are some good roles. (NGO49-01-09[182])

Note the term "platform" was used by the organizer to emphasize the partnership of cross-sector interactions that would draw the different specialties performed by actors from the three domains. The collaborative role performed by the state sector was perceived to be one of "facilitation" especially in terms of providing land-use permission as well as other types of relationships between civil society actors and government agencies inside the state domain. Such a culturally bounded and socially recognized collaborative institutionalization process was one that characterized the source of

[182] For original Chinese script, please see Appendix 7.1.11.01.

emergence in cross-sector institutional development between actor #49 and other actors in the state and the market domains. "Institutions", therefore, in this context, was most appropriately understood as arising out of a significant dramatic event which prompted the discovery of culturally embedded roles through a process of self-awareness and actions taken by the civil society actors. The initiative in enacting the agency freedom on the part of civil society actors played a key role in the formation of this kind of collaborative interaction. In other words, it had a bottom-up feature in its nature and orientation. One important point to emphasize here was that the interactive dynamic was not one that perceived to originate from a set of pre-determined rule-based institutions.

> LU: Are there any kind of institutionalized support for such three-party collaboration projects?
>
> NGO49-01: I think for Chinese, we do these kinds of things in a different way when compared to Western people. We might not have clearly stated agreements or formal framework for the collaboration works, but our current 'TK International' community center is executed within this kind of framework. We also have a project management committee, just like what you just said, just in the format of a project management committee. Two representatives will be sent from each of the following parties: the government, funding agencies, our own management committee, and from community residents. And we jointly make decisions on how to run the projects. But it is us who eventually execute it. So this is what it means…it's about stakeholders getting together to join a discussion. (NGO49-01-10[183])

[183] For original Chinese script please refer to Appendix 7.1.12.

The "bottom-up" nature of this cross-sector interaction was not executed through pre-existing rules or written agreements. Rather, it was carried out by a joint-participatory mechanism that involved discussion forums incorporating "stakeholders" from the government, the foundations, NGOs, and the local community. And the final execution of the decision-making results is implemented through the action of civil society actors[184].

In summary, similar to actor #97, the sources of cross-sector action and persistence for actor #49 first came from the desire for a complementary role accompanying the state activities after the disaster event. For this actor, the desires did not arise simply out of impulsiveness but from a fundamental awareness of the strength of civil society actors functioning particularly in areas of providing social services and community development over the long term. The actor was also keen in defining its active role in forming the cross-sector collaborative relationships rather than depending on the pre-existing set of rules.

[184] For detailed accounts, refer to Appendix 7.1.CaseNGO49.5.

Cross-sector Institutional Development in Action

The Case of Actor #51 (NGO51-02)

First of all, in this section, the perspective of the study will turn to looking at a particular individual field visit experience. It is illustrated in a thematic narrative format in order to reveal how the role of the organizational actor (#51) was being executed and experienced. The section provided a qualitative explanation to understand the origins of the actor's critical network positions being demonstrated throughout the chapter.

Secondly, this section is a continuation of the previous examination in tracing back the emergence of actor NGO51 (the establishment of the Sichuan field office) and its original motivations for taking actions by looking at the organization as a whole. Recall that one of the key operation mechanisms in its participation in the disaster recovery process was the implementation of local community centers in collaboration with local social organizations or emerging grassroots social groups in their "incubation" stage. The rest of this section provided an illustration of how the themes of cross-sector actions (civil society, state, and the market system) as well as institutional development of the collaboration efforts were being carried out through the existing community centers located in the city of Dujiangyan.

My community center site visit was accompanied by one of the actor's field officers (NGO51-02). As part of her duties, the officer was in charge of conducting periodical evaluations of the collaborative programs being carried out in local community centers. And the way that she carried out these evaluations was to pay actual field visits to each one of the sixteen community centers that NGO51 administers at the time. It would usually take her about two months to finish one round, if taking into account of the time spent on traveling and that spent at each particular site collecting information and providing guidance. Regarding the site that we visited, it was one among the sixteen centers that the actor established within the earthquake area under the financial support from the private enterprise N. One unique characteristic for this community center, as later pointed out by the field officer, was that it was the only one project being carried out by the collaborative efforts with a local social organization that is affiliated with the local government. This led me to first examine the nature of this partnering organization. After a conceptual clarification, the section will move on to look at how the collaboration was being experienced by participants from both the state and the civil society sectors.

From the outset, the partnering organization (SS) that performed as a collaborator with NGO51 was established as a "social work service organization" and formally registered as a nonprofit organization. However, when tracing back its origin of

formation, the establishment of the entity was "jointly incubated" by the "Social Service Associations" at both the national and the city government level. As was also recalled by the field officer of this organization (SS-01),

> We are a different 'breed' of organization…started out on the government side wanted to establish it first, others have social workers, we want them too…Shanghai has social workers, we will have them too….so the situation is we first established our social work association. It's like having leaders first and then find workers. Other industries will build the substantive foundation first, then organize the association. We are the opposite. (SS-01-01[185])

What this means is that the organization did have a government background and its establishment was prompted by the state sector's intentionally promoting the field of social work practices particularly for the earthquake recovery efforts. On the one hand, this indeed showed the awareness of the importance of nonprofit organizations conducting social work-related practices in the disaster-hit areas. On the other hand, although holding a title of registered nonprofit "social organization", its nature is essentially different from those grassroots social groups and organizations formed in a bottom-up way. This demonstrates that in the Chinese context, the registration title alone will not be sufficient to determine whether an entity can be counted as a civil society actor or one that belongs to the state sector but providing services similar to those in the

[185] For original Chinese script please refer to Appendix 7.1.13

civil society domain. To distinguish one from the other, one needs to comprehensively understand not only the origin of the organization but also examine the functioning of its field practices. The following sections will be devoted to look at this latter endeavor. Each of the sub-section was organized by the different issues that the community center encountered.

Civil Society Actor and the Local Government Interaction

Implementation Issue-1: Community Activity Poster (活动室的海报)

On the morning of my visit to the community center, the program officer (NGO51-02) and I were accompanied by the staff (SS-01) working for the partnering social service organization. After about an hour of driving from the city center of Dujiangyan, we arrived at the site and were greeted by one of the NGO51 volunteers (NGO51V-01) stationed long term in the community.

The activity rooms for the community center were located inside one of the four-story high residential buildings. Each of the room in the center was designated to serve a particular group of people, such as youth, elders, and women. After we were given a tour

around these different sections of the center, the field officer NGO51-02 started noticing that there was no clear sign posting outside the building where the center was located and made a suggestion that a plate be placed at the entrance gate so that residents of the community would be aware of the different types of activities being offered by the center. However, the responses of the volunteer (NGOV-01) and the officer SS revealed an aspect of diverging interests between the village government and the community center.

> VOLUNTEER: We are not allowed to paint whatever we want on the walls of the activity center. We used to stick posters on the walls and they were torn down by the village party secretary. This village has a really high standard for its overall cleanliness of the living environment, and they will have strict requirements in where to post things and where you cannot do that. If we have to post, we can only post them on the display stand at the entrance gate.
>
> NGO51-02: …I think this is interesting…this thing would originally be in accordance with the interests of the village, and why would they still have these kinds of requirements?
>
> SS-01: …this village has a very heavy load in handling the visits from government officials. Almost all levels of officials from various administrative departments will come here for visit. That's why they would have such strict standards for the community environment…and we have to accept their arrangements.
>
> NGO51-02: I understand, but how would you pass on the center's activity information to the village residents? Is it by notices?
>
> VOLUNTEER: We will choose two or three leaders in art activities or intellectual type of residents, and those who are well-respected among the residents, to let them know. Since they will all join the daily dance gathering at the village square, at around the same time every day, except for those rainy days…

…this is our monthly activities chart, those related to elders, youth, and women…the activity types won't change much.

NGO51-02: Is this table used for your own reference and reminder?

VOLUNTEER: To some extent, it was placed downstairs and the residents would come and look at it. After sometime, they became familiar with it, and took it up here again.

NGO51-02: Can you use some kind of big white poster paper and put it up in the publication and notice stands?

VOLUNTEER: Yes, we can, but the size of the paper cannot be too big. If too big, and if government officials would come and visit at on the same day, they will tear it down again.

(NGO51-02-01[186])

This showed the first type of obstacle in implementing the tasks of community center at the local village level and such arose from finding effective channels of communication to inform and encourage community residents to participate in the center's activities. Also note that this type of conflict did not arose between the two social service organizations but between the diverging goals of local village government and the community center at certain incidences. In this case, as was pointed out by the volunteer, it became important to identify some "prominent" individuals among community

[186] For original Chinese script please refer to Appendix 7.1.15.

residents and encourage their role in informing and sharing activity-related messages to other members of the community.

Another aspect of the issue is the level of facilitation being provided by the village government when the center was trying to implement its tasks. From the following conversation, we can see that this had raised the field officer's (NGO51-02) awareness of the role of village government in carrying out the center's designated activities.

> NGO51-02: The village government, including the party secretary, were they being supportive for our work?
>
> VOLUNTEER: They were being relatively supportive, or otherwise, they won't provide us with our office here.
>
> NGO51-02: Have they paid any attention to the implementation of our activities?
>
> VOLUNTEER: Not very much. But that director in charge of women's affairs would pay relatively more attention. This is because she is interested in these kinds of activities herself.
>
> SS-01: I can safely tell you this…because we've been here for a long time…since August of 2009, they are worried about us in any sense.
>
> (NGO51-02-02[187])

[187] For original Chinese script please refer to Appendix 7.1.16.

This interaction reveals a critical aspect when providing social services at the local level and it is the role of the village government in the process of implementing the goals of community centers. For this community, gaining the trust of the officials in the village government was important in obtaining the needed facilitation for program implementation.

Implementation Issue-2: Site of the Community Center (活动场地)

As the conversation among the field officer and the volunteer of NGO51, as well as SS-01 being carried on over time, a second issue arose in terms of the site provision for community center activities.

> NGO51-02: Will they put a time limit on the usage of this activity space?
>
> SS-01: We don't have such a detailed timeline, neither do we have a written contract thing. In any way, if we are in need of these kinds of things, we can just go and tell village government. They said OK, and provided us with a space, but didn't tell us whether there will be an expiration date.
>
> NGO51-02: The spaces we are using for our village supermarket and the community center upstairs all belong to the extra housing spaces offered by the village residents…
>
> SS-01: The rooms are, no one lives there.
>
> NGO51-02: But do we have any kind of contract that guarantees us for using that space for center's activities?
>
> SS-01: This we don't have…

NGO51-02: What I'm worried about is what will happen if situations change? If tomorrow for example, the resident who offered this space would want it back to do his or her own business, then, could we face the problem of losing it?

SS-01: We have not thought about that yet. But the chances are very slim.

VOLUNTEER: The chances that it will happen is relatively slim, this is due to this specific environment. In general, people will not come up here to do businesses. Those who do would be people on vacation or summer holidays. Plus, we are not the only village who has these empty housings to use for other purposes (like doing business), other surrounding villages have these too.

NGO51-02: oh, that's good, at least everyone can use it here…

SS-01: Not sure how to say it…but the village residents have showed so much hospitality towards us. Back then, the village government wanted our station to move, many of the residents raised their voices to have us stay, they would say that 'how can you let them go? And not even give them an office to work?'…so even if we don't say anything, the residents themselves would go say it themselves.

(NGO51-02-03[188])

As was pointed out by the field officer (NGO51-01), one of the key concerns from the perspective of NGO51 was the center's ability in providing long term activity-based support for the community. One factor that contributes to such ability is whether the physical space where the center conducts its activities can be guaranteed for use over time. In this case, we can see that there were certain degrees of informality being involved through the negotiation process to gain the approval of the village government.

[188] For original Chinese script please refer to Appendix 7.1.17.

Institutions interpreted as rules were basically non-existence during this stage of program implementation at the community service level. However, if institutions are understood as norms and cultural expectations, the case presents an initial stage of institutional development as the practices of the community center started to gain trust and approval from the residents.

Functioning Issue: Forms of Support for the community

Substantive concentration #1: Social Support

> NGO51-02: So would the local government have any particular expectations for our work in their development plans? They provided us with a physical space, and also some other things. But do they want to see anything from us?
>
> VOLUNTEER: More would be about rebuilding community culture through community service provision, increase the sense of belonging. This is because although the community residents here were once part of one village, but they lived in different location groups. When they had to come here and live together, the ones that used to be in one location group would be more familiar with each other. But if not, they would at most say hi and won't talk and interact much. But they are all living together now, after all, it is different from when they were living different housing arrangements where people would live apart from one another. Thus, the nature of the neighborhood relations changed. That's why the sense of belonging among them needs to be forged.
>
> NGO51-02: social relationships need to be rebuilt. The relationships certainly require time to recover and rebuilt. How is the situation now?

VOLUNTEER: Our activities have played its role in facilitating some of the effects. For example, if they are living in one building together, even though they would not see each other often, but they will get together through our activities and you can see them chatting.

NGO51-02: Are the interactions among similar kind of people increased in any way? How do we divide the different groups of people here in the community?

VOLUNTEER: Elders, women, children, and the disabled families. People with disabilities living in this community are rarely completely incapable of taking care of themselves…those who can't are probably around 3-5.

(NGO51-02-04[189])

The provision of social support after the earthquake was recognized to be an important functioning of the community center. This aspect of the functioning originated from a need for local cultural development after the restructuring of the social relationships among local residents since the earthquake event[190]. But from the perspective of NGO51, it was also important to assist the internal development of its partnering organization through the collaborative management of the community center. The informant NGO51-02 constantly provided feedback and suggestions to encourage a type of collaborative reflection on how the center's work has been enhancing community capacity in problem solving by its own members[191].

[189] For original Chinese script please refer to Appendix 7.1.18.

[190] Please see NGO51-02-05 for actual conversations in Appendix 7.1.19.

[191] Please see NGO51-02-06-1 for conversations in Appendix 7.1.20.

Cross-sector Action and Institutional Development (civil society, state, market)

From the previous illustrations of the different issues being encountered by actor NGO51 and SS upon providing social services at the community level, it is important to note how the collaboration process was being "jointly-learned" through field practices between the participants from the two organizations. On the one hand, the two actors were indeed officially engaged in collaboratively providing social services to the local community. On the other hand, the experience of the field officer NGO51-02 revealed certain aspects of the implementation process that rendered attention for future improvements.

> LU: If difference in opinions arises, how would you resolve?
>
> NGO51-02: Haven't encountered many these kinds of situations yet. Other community centers do not operate like this one, this center is the only one that was built with the collaboration with the government. So let's say when we do encounter differences, then, the first thing we need to do is to be clear about the primary purpose of the program in the first place. Although there was a contract on our collaboration, but there are still things that are unclear, and some of our ways of thinking were not in accordance. If we will be doing it long term, we have to focus on where we do agree with each other on the broadest points. If there are agreements on the broad framework, then, OK, we then move on to discuss the important tasks to be done in one particular program.
>
> First of all, we need to ask why our program was established in the first place, why financial support was given and what were the goals, these are all the aspects of the matter that still require better communication between the two parties. The current undergoing program assessments is organized and has its purpose,

> basically to evaluate the mobility of personnel and their financial management. As for this center, the level of personnel mobility is relatively low, because they are government. The financial cost for such mobility is fixed, so they won't have problems with the mobility aspect of the program. Neither do they have any big issues with their financial management and operation standards. The last problem is regarding the professional level of their team being involved and this is what they lack. If you want professional results, then, you need a group of people who are capable of doing professional work. (NGO51-02-06-2[192])

Essentially, the implementation process of this particular type of institutional arrangement for collaboration encountered two kinds of challenges. First, there was a lack of clarity on "the common ground" that can be actively established by both parties when practicing in the field. On the part of NGO51-02, although institutions understood as written formal agreements or rules did exist and were signed, actions were still needed for both parties to collaboratively identify the field-specific goals so that the program can sustain over the longer term. Secondly, there was a concern of a lack of trained professionals practicing in the field. In this regard, it is the implementation process of the program that both parties had to work through in order to carry out the tasks set out for the community center at the local level. At the very foundation of these key challenges lies the need for a collaborative learning process to explore the roles that can be performed by the actors being involved based on the set of common understanding of

[192] For original Chinese script please refer to Appendix 7.1.21.

goals reached beforehand. The following section will illustrate how each of these two challenges was being jointly approached and experienced by participants of NGO51 and SS.

"Resilience" as a Learning Process to Cope with Risk: a Public Health Perspective

In this section, I will elaborate on the experiences of how the two NGO actors came to identify a set of common understandings of their field-specific goals as well as an implementation process that defined a set of preliminary roles that can be performed by each actor in local community affairs. The reason that the processes in dealing with these two challenges are illustrated and discussed under the section regarding "resilience" is that it was a learning process not only for the two organizational actors to enhance their capacity in managing local community affairs through the establishment of the center, but also for the residents of local community to enhance their own capability in establishing and managing their won social support system.

The Implementation Process: Professionalism and Capability-building

In the previous section, we have seen that leisure activities, particularly arts and music-related ones, facilitated by the community center indeed provided an opportunity for certain "lead volunteers" from the community to emerge. However, from the perspective of the field officer-NGO51-02, the capability for the community residents themselves to independently solve their own problems and find ways to provide supports for those in need without solely relying on the full time assistance of the field officers from the NGO organizations would still require joint attention and efforts on both sides of the partnership. She put a significant emphasis on the breadth and the depth of the assistances towards handling the various kinds of activities being provided through the community center, especially the roles similar to those played by professional "social workers".

> So if the volunteer leaders started to develop certain level of dependency on the center's team…but the goal of the center's program is to not only to facilitate the solidarity among community residents but also in nurturing the capability of the residents to solve problems on their own, including coordinating arts and leisure activities for the needs of the community. So according to the current situation, some participants can indeed organize these activities, but they lack the relevant skills and abilities to communicate well. Or their ways of thinking over some issues might need the support from the center. Then, what can the center do in these aspects of matters so that the community does not have to depend on them anymore in the future. The center does its work not to create dependency, but for training others not to be dependent on them anymore.

> A well-running community center is a place where residents would want to come and participate in its activities. Once it becomes such a place, the center will be able to start facilitate the social relationships among the community residents. Such facilitation will encourage them to willingly participate in publicly discuss community affairs, develop their ability to coordinate public affairs and resolving conflicts. All of these kinds of capabilities can be developed through center's activities. But such in-depth engagement to perform professionally has not been done by the center. Things only exist on the surface with activities only creating a lively atmosphere. (NGO51-02-07-1[193])

Two kinds of roles can be distinguished from this account of the field officer regarding the functioning of the collaboration program. One is the role of the community center itself. As a "public space", the function of the center is not just one that provide residents a place to get together solely for leisure-related activities. The core of the functioning resides in the provision of a communication platform where opinions and discussions can be freely raised among residents of the community. And through such a process, the "public affairs" are willingly to be discussed, thus capability of the community as a whole to facilitate and resolve its internal conflicts can be developed. Although the leisure activities themselves are not an end in themselves, they can be a means towards promoting further discussion of public affairs issues.

[193] For original Chinese script please refer to Appendix 7.1.22.

The other one is the role of those working for the community center. The field officer provided an ideal case when the functions are performed by professional social workers. Although haven't been completely realized at the center, such a depiction represents a performance goal towards which the participants of the partnering organizations to aim for in the long term. While the center itself is designed to provide a public space for solving community affairs by residents themselves, the existence of social workers are meant to facilitate the residents to discover their own capabilities in participating and managing public affairs. In other words, the community should be able to develop a type of capacity that it can solely exist onto itself but not onto or dependent on any kind of the outside support, such as in the case of developing a habit of relying completely for the assistance of social workers. Thus, the key for actions taken by the participants of the collaborating partnership is one that facilitates the awareness of the community in its own self-organizing and problem-solving capacities. The participants themselves are not considered to be in the "spotlight" or "forefront" of the process.

Essentially, the primary purpose of the existence of the collaboration program through the establishment of community centers is perceived as one that enables self-reliance among those that it intended to serve, rather than the type of serving that could breed dependent behaviors. The "power", or more precisely "resilience" at the

community level, from this kind of program implementation process, originates from the development of capability from within and being acted out through self-organizing and problem-solving initiatives. To use the words of the field officer of NGO51,

> If you are doing it for the sake of the community, the intention is to be on discovering and releasing their capabilities. Our target population has the capability to do it. The thing that is needed is to break certain set of obstacles or restraints due to the social environment they are living in or their own personality issues. We can help them overcome these obstacles. People have inherent capabilities, not completely in need of depending on others to solve their own problems. (NGO51-02-08[194])

Common Ground: Enabling Community Social support

Tracing back the impetus of the establishment of the collaboration program in the form of local community centers, the changes of the original social support system brought forth by the earthquake event and consequently during the housing re-construction process was depicted as the primary concerns from the perspective of both the partnering organizations. On the side of NGO51, the need for promoting social connections (人际的交流) among community residents originated from the fact that the traditional living arrangements of an increasing number of the earthquake-impacted communities had been drastically altered during the housing-reconstruction process after

[194] For more information and original Chinese script please refer to Appendix 7.1.23.

the disaster. From a traditional type of scattered living arrangement with groups of families living far apart from one another, to the new style of concentrated living arrangements similar to those of the urban communities with households living close to one another, the rural residents often found themselves having to adjust to new groups of neighbors after moving into the new communities after the earthquake.

With such dynamic shifts in local social contexts accompanying the disaster recovery process, one of the foremost goals of establishing community centers in these earthquake-impacted areas was agreed by both partnering organizations was to re-build the relationship structure enhancing the "social solidarity" among the community residents[195].

> The reason that we came to this community was because it was a typical rural community exemplifying a new type of living arrangement for rural residents…characterized by concentrated living arrangements, from the original scattered ways of living. So, there is the issue of adjustment so that a sense of group identification and belonging can be developed among community residents. This was our goal when first entered into the community. Through our organized activities, we want to see more elders and women are willing to come out of their homes and participate. And through their participation, they will be more aware of the community affairs. Yes, we do have some government background, because we are sponsored by the Bureau of Civil Affairs. So many of our tasks would require us to coordinate and complement the works of local government (at the village level). For example, what does the local government care most about?

[195] For more detail, refer to SS-01-03 in Appendix 7.1.24.

> What kind of problems do they want to solve? The answers to these questions are the ones we need to focus on. (SS-01-02[196])

Note that the motivational focus for SS to participate in collaboratively running the center lies in the re-construction of local residents' collective identity and a sense of belonging towards the new type of community. And this kind of social "solidarity" is intended to be built through encouraging residents participating in center's activities and thus raising their awareness of self-governing the community affairs encountered in their daily lives. From the perspective of NGO51-02 on the other hand, the role of the center does not just stop at building social "solidarity" among residents. The primary motivation was depicted further towards capacity-building for the residents of the community to be able to self-organize and self-manage its own public affairs, when solidarity and cohesiveness are in place.

> After the social order was disrupted among village residents after the earthquake, the rebuilding of social ties does need some kind of spur. The resolution to community affairs needs the direct participation of community residents. So the goal is to build a public space and use the activities there to facilitate communications among residents, and thus increasing their trust for others. This way, they can learn how to discuss community issues together and build up such an awareness and capability. Such is the model that is designed to drive the active participation of community residents to collaborative manage community affairs.
>
> The first step for the center to become the public space of activities is to create a sense of solidarity and cohesiveness around it. The second step is to pass the

[196] For original Chinese script please refer to Appendix 7.1.25.

> message on to the residents that the center is truly a place they can go and receive the services they need. When coming here, they will feel like they are the host, and there will be people there to provide services. As a result, I'll feel my own capability is being enhanced or being empowered, as the center is the place where I can go to get my needs met. This is why we need to target different groups of people with special needs and provide services to them. (NGO51-02-09[197])

First note that the motivational "common ground" between the understanding of NGO51 and SS lies in the function of the community center in the social aspect of earthquake recovery, especially in building interpersonal trust. The residents' willingness to participate in the center's activities is again being emphasized as a way to raise awareness and generate discussions through an enabling medium created by the center's public space. Secondly, from NGO51point of view, building "solidarity and cohesiveness" inside the community is not an end in itself as for the role played by the center. They are considered as one of the preconditions from which the capacity of the community to self-manage its own affairs can be developed. One other precondition mentioned by NGO51-02 in this context is the type of service provision catered for a variety of group activities, such as those for elders, women, and youth.

Thus, although participants from both of these organizations considered their primary intention in the role of the community center was to rebuild the community's

[197] For original Chinese script please refer to Appendix 7.1.26.

social support system after the earthquake event, there are slight divergences in how the task can be implemented in the field through the role performed by the community center. One view, as emphasized by the field officer of SS, concentrates on the center's role in promoting social solidarity among community residents and the following discussion reveals such a recognition process from his conversation with NGO51-02.

Role interpretation

#1: "Harmonious" community propeller

> SS-01: Participation, can have many facets. This means that residents organize and join activities, and while together, they might encounter certain issues of the community. This is an indirect way for them to participate into the village affairs.
>
> NGO51-02: When they are having discussions during dancing activities, what kind of conversations would that be?
>
> SS-01: it depends, sometimes when a topic was brought up, they will engage in conversations by themselves.
>
> NGO51-02: Who would be the organizer of these activities?
>
> SS-01: We are the organizer. The activities can be in the form of dancing or tea party. For example, we have one activity called "memoirs of the past". Some of the elders had lots of experiences. So when they were engaging in conversations, we would throw a topic out, then, they would go along and discuss about it further.
>
> NGO51-02: So is there any result from the discussion?
>
> SS-01: Some will not have results…

NGO51-02: But if I were to participate, I should join in the decision-making process for seeking resolution for one particular issue. If it were only for discussion, so what happens afterwards? Will they be able to participate in how the decisions are being implemented?

VOLUNTEER: Yes, this is because every month there will be a village committee meeting. That's when residents can raise their voice (on community affairs), join discussions. If reasonable, the village cadre will adopt them.

SS-01: Every village here has its own village committee and its own members.

VOLUNTEER: If you have suggestions, you can raise them to the village cadre.

SS-01: After we initiate a topic into their discussion, some of their opinions might not be correct, or on the extreme side of thinking. At those times, we will point it out, but without telling them it's not right or not appropriate. We will just illustrate the fact of what it is like.

NGO51-02: So in the area of managing community affairs, our role is to facilitate the communication between the residents and the village cadre.

SS-01: Our role is like a speaker. But as for reaching a clear goal, we might not have the ability to do that yet. We can only help pass on a correct message…this is because when you put up notices for meetings or other kinds of information, the villagers won't understand, and they won't be able to grasp the key messages, or the way they understand things might be deviated from what the messages on the notices. So, we can intervene through our activities, and enhance their sense of belonging to the community.

NGO51-02: So as for the main goal for the community center in **village, what do you think of the current aim of the project is? Because we need to position ourselves first, what do you hope the center's role would be in order to reach the goal?

VOLUNTEER: It's going to be a role like a facilitator (or propeller) for a harmonious community.

SS-01: Indeed, all of our activities should bear such a goal, enhancing harmony inside the community.

(NGO51-02-10[198])

Note that the essence of this view in the center's role is in promoting a sense of belonging and trustful relationships among community residents and it is realized mainly through encouraging their general participation in the center's activities. One other view as emphasized by the response of NGO51-02, rests upon an interest in developing the community capacity to self-organize and manage community affairs. In other words, the innate capability for the community to think and act together independently in solving community affairs is the key factor that propels the action of NGO51. Here, I would name this role as a "promoter for community capacity-building". In the following elaborated account from NGO51-02 in further defining the role at the community level, the field officer first brought up an issue concerning the danger of organizing activities that only assemble the likeness of a "cohesiveness" and "solidarity" community from the outset.

[198] For original Chinese script please refer to Appendix 7.1.27.

#2: Community Capacity-building Enabler

> From our point of view, the ideal situation does not have to have lots of "fancy" things going on. Those activities only look lively on the outside, but if we look at whether the activity participants truly experienced happiness from willingly being part of it through supporting each other, without complains, is another thing. There is a saying among social workers, and it is to enhance the social participation and social support capability of our service targets.
>
> If you see a group of people dancing over there just for their own pleasure, and has nothing to do with others, this would be part of the superficialities. This is not what we would like to see in our community activities. These things would just look like lively, but neither did it improve the inter-personal relationships among community residents, nor did it enhance the residents' capability to be aware of issues and affairs pertaining to their own community. Then, these types of activities will not perform their role in bring about real change to the community. Even if they are being maintained over the long term, there won't be any real impact to the people living in the community. (NGO51-02-11[199])

Through this account, it is clear that the field officer NGO51-02 was well aware of organizing the type of activities that only symbolically draws the residents together for leisure activities. Spending time together in leisure by itself is not the problem, and in fact, both of the organizational partners agreed upon the necessity of it as a starting point for building further trust among community residents. However, the concern here is that these kinds of activities are organized as an end in themselves without paying attention to

[199] For original Chinese script please refer to Appendix 7.1.28.

how the residents actually experienced and interpreted the events at the personal level. Do they truly feel a sense of belonging? Will they develop mutually supportive relationships to care for one another in times of needs? It is therefore the latter process activated by the organizational participants in running the center that determines whether actual social changes have been made inside the community towards building up an emergent social support structure from the grassroots.

From this perspective, social "cohesiveness and solidarity" at the community level is brought about by enabling the actions taken by residents themselves rather than by symbolic activities or by imposing a set of rule-based institutions from the outset. In other words, the type of institutional transformation referred by NGO51-02 is one that grows from within and generated by the community itself. The role of the collaborative program in implementing the tasks of the community center is to facilitate and assist the development of a capacity for the community to self-organize and generate institutional changes. As was put by the field officer,

> What we need to see is that capacity-building inside the community is directly related to the 'organically-grown' volunteer teams emerging inside the community itself. Or in other words, directly tied to the growth of those groups serving the interests of the community within which they also live. Therefore, the process and conditions through which these groups grow are directly linked to the effectiveness of our center's work. For example, we will see if some elders' groups emerged in the community and they are willing to take up certain

> leadership positions on their own, knowing how to take responsibilities for certain duties, as well as knowing how to organize activities. Our role is to provide them with the necessary support, advice, and some financial assistance to facilitate their carrying out the activities. The similar emergence patterns should be seen for those groups related to youth and women, on the topical areas such as education and livelihood. Each one of the groups will have its own unique activities. This is how we think should be the right way of doing community services. If after our exchange of ideas and communication, we can reach a common ground of understanding, our collaboration work will be greatly facilitated. (NGO51-02-12[200])

From "promoting harmonious communities" to "promoting community capacity-building", the two types of understandings in the role of the community center, although related, diverge at the kind of communities being envisioned and can be re-constructed. One rests upon rebuilding the interpersonal relationships among community residents so that conflicts can be avoided and trusts can be developed. Although this can be part of the outcomes reflecting a "cohesive and solidary" community, the institutional changes required for generating a grassroots social support system are built on further creating an enabling space for agency action in terms of self-organized associational and group activities. Such is the other point of view in promoting community capacity-building. The figure below illustrates the relationship between the two kinds of focuses with one building on top of the other.

[200] For original Chinese script please refer to Appendix 7.1.29.

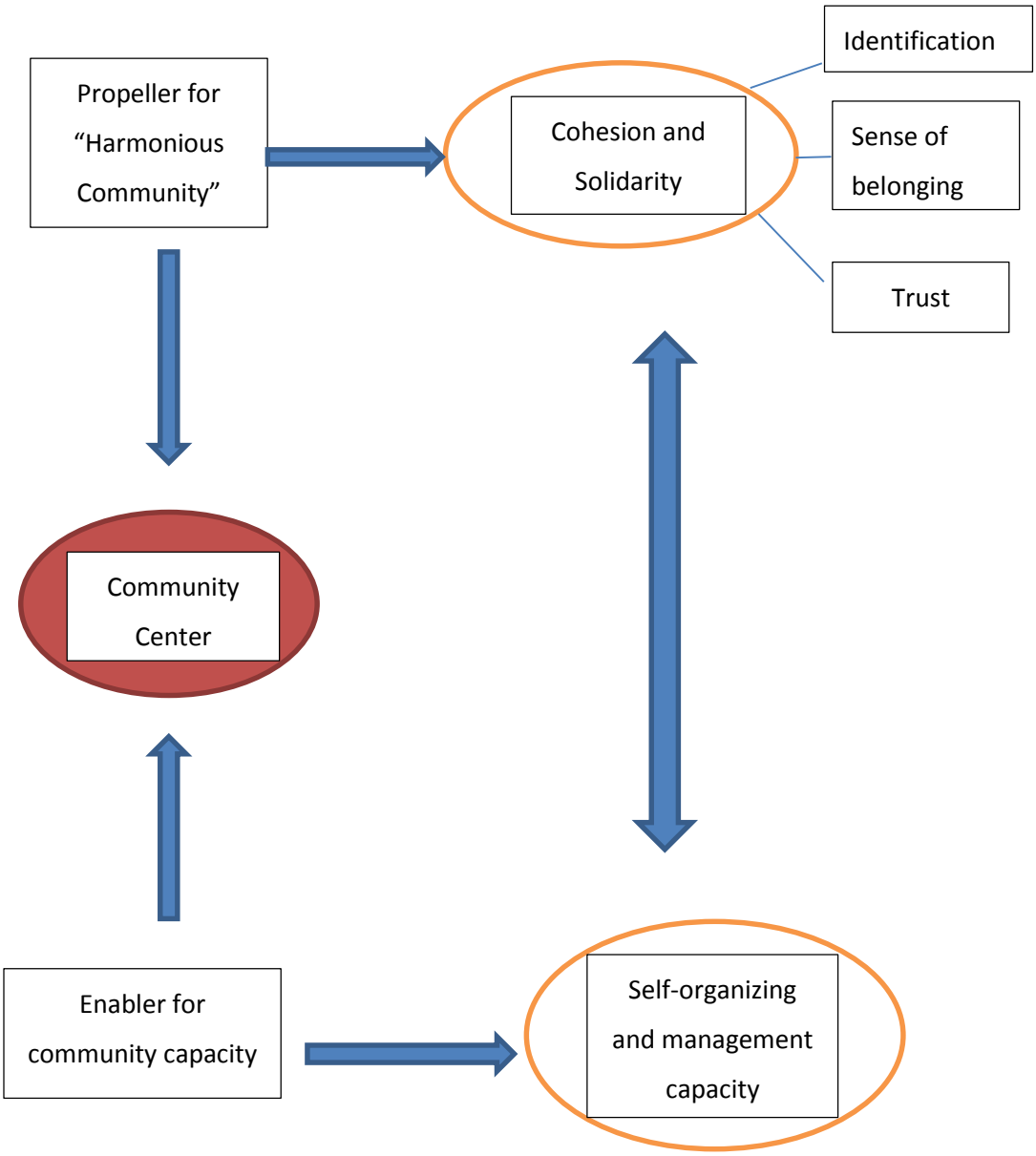


Figure 7.4. Process of Civil Society Role Identification (Case of #51)

While the two field officers and the volunteer were sharing their thoughts on the role of the community center, I was surprised, or more precisely encouraged by the way that NGO51-02 would think of the innate capability potential of each individual village

resident. Throughout their conversation, one issue that the field officer from SS would constantly bring up was the type of conflicts that could be attributed to the lack of education of the community residents. For example, while some lead residents were actually capable of successfully organizing cultural events for the community, they would often go to the village party secretary and complain about the not being compensated for the things they have done. From the perspective of SS-01, this would be due to a fact that is common among most the local communities in rural area, and that is the limited educational level of rural residents. And whenever he raised up this kind of issues, it would seem to him that there is a "dilemma" between developing community leaders and resolving the conflicts that arose after their volunteer duties.

However, the field officer NGO51-02 would try to steer towards a different but more positive point of view on issues like this. She would see these incidences as valuable opportunities to communicate with these community leaders and try to understand the reasoning and motivations behind residents' behaviors. Each time this kind of topic arose through our field visit, rather than attributing the problem towards the residents themselves, NGO51-02 would see these cases as a way for the center to get

know the life history of each individual resident and help him or her to overcome the obstacles that could possibly be source of the types of conflicts mentioned earlier[201].

These contrasting views in looking at residents and their role in managing community affairs kept provoking me to think about the reason behind such differences. Eventually, towards the end of our field visit, I finally came to realize the source of the actions of NGO51 as an organization and NGO51-02 as a field officer in the first place. It originates from a basic trust in an innate capability of each community resident, regardless of their educational or life background, to do "good" and serve for the interests of others. What is important is in finding an institutional mechanism that can bring about their awareness of such capability and providing a nurturing environment for them to develop this capability in relationship with others in the community. The following paragraph depicts the action motivation of NGO51 as its field officer used the term "we" in representation of the organizational actor:

> How are we to look at villagers? It's not because they don't want to show or express their good nature, neither is it because they are born with a materialistic outlook and like controversies. There are many reasons behind it. I think what we need to do is to first trust them, trusting them to have the capability to do good (for the community). And we need to find out what's the source that led them not being able to show that side of the nature, not willing to give up their self-interest, not willing to provide services to others, or to complain all the time. All these

[201] See Appendix 7.1.23 for detail and Appendix 7.CaseNGO51.02 for the actual conversation in Chinese.

> have reasons. Once the sources are found and opened up, this person will grow, and he or she will have another type of virtue, thus being able to contribute more to building up family and community relationships. (NGO51-02-13[202])

To actor NGO51, the establishment of the community center can be a prototype of one institutional mechanism to bring about the innate capability of community residents and the key to the process, as being revealed here, is the construction of a long term entrusting relationship between the center and the residents which is built on mutual confidence and perseverance. On the one hand, the residents would go to the center being confident in that it will be a place to receive the needed services and develop themselves at the same time. On the other hand, the center will entrust a confidence in the capabilities of residents and provide a context for them to bring about these "inner state of being". And such motivation for taking action is also reflected in how the organization's field officer to ponder about her own tasks and as an individual experience.

> Sometimes I would think…how I can do it through my work to truly communicate and understand them, even if they are illiterate. How can I encourage them in such a way so that the virtuous side of them can be enhanced and thus enabling them to develop their capacity to serve others. We certainly need a lot of patience in these kinds of things. (NGO51-02-14[203])

[202] For original Chinese script please refer to Appendix 7.1.30.

[203] For original Chinese script please refer to Appendix 7.1.31.

Overall, although some hurdles remain in the collaboration process in carrying out the tasks of the community center for the two partnering organizations, common ground did exist and it was also encouraging to see the field participants' willingness to share thoughts together to discuss the possible ways of improving the implementation process of the center for the betterment of the community lives of local residents.

Chapter 8

Institution Building and Role Formation

Solidarity Formation

In the earlier chapters, I looked at how agency freedom inside the Chinese civil society domain was unleashed through the communication and collaboration actions immediately and long term after the 2008 Wenchuan earthquake. The inception and the maintenance of the widened interaction boundary of communication networks revealed the emergence of a self-initiating civil society with an expanded capability set for the functioning of group/organizational actors. The structural change of the collaboration networks provided the sustenance of the actors' agency efforts to build an evolving institutional character of the civil society domain. Then, the co-evolution of the network environments ensured that an institutional transformation of the civil society domain was possible when the pre-existing social order experienced a profound change after the disaster event. As the communication and collaboration ties among the civil society actors were strengthened through persistence and sustenance, their actions towards the state and the market were initiated, thus further enhancing the actors' ability to maintain

the established capability set. In this chapter, I examine how the energy of agency freedom was stored and harvested within the civil society domain in order to form the foundation of institution-building.

The first network measure that I provide an in-depth examination is called *density*. This is a concept in network analysis used to summarize the overall distribution of ties and how far away the current structure is from the complete state. For example, density is calculated by dividing the number of physically occurring ties by the maximum possible number of ties that can occur within a given network environment. In other words, it calculates the proportion of all the possible ties that are actually present. A *complete state* would mean that each actor in the network is directly connected to every other actor regardless of who sends out ties and there are no isolated actors. The direction of a tie, such as whether it is the focal actor initiated a connection or the others reached out to the focal actor, will also be taken into consideration in the calculation of density because the networks under investigation are ones with directions.

Because those actors who were not connected to anyone in the network were counted towards "isolates", they did not enter into the calculation of density distribution. Thus, the idea that becomes relevant upon considering these types of actors is the

inclusiveness of the network. To illustrate this, I use the example of one tie between actor A and actor B. For this one tie to appear and be part of the overall social structure, it needs to involve the two actors. And by A reaching out to B or by B initiating a connection to A, both actors were counted as part of the network graph, thus being included in the structure formation of the network. As we have seen in the earlier chapters, some actors will have more such immediate connections while others have less. The higher the degrees of actors not only means that more ties are being present but also more actors are being drawn into the network structure through common ties. Therefore, those actors who neither did not reach out to others nor were being contacted by others at a given time will not be reflected in the network "inclusiveness" through the actual number of connections in the present graph. The following formula shows how the inclusiveness of actors and the number of ties are being considered in the density calculation:

$$\frac{l}{n(n-1)}$$

where *l* is the number of ties present in the social structure of interest. And *n* is the total number of actors or nodes being considered, including the "isolates". The function *n(n-1)*

is the maximum number of connections can be presented by simply calculating the total number of pairs the network can possibly contain.

Therefore, by looking at the overall density measures across types of networks and over time, this section of analysis is written to illustrate the patterns of connection by observing whole networks. In comparison to the earlier discussions focusing on the networks surrounding one particular actor, or its immediate "neighborhood", the analysis of density shifts the attention to the whole structural changes of the networks. Such is the difference between *ego-centric* and *socio-centric* analysis (Scott 2001, 69), and the latter is the focus for this section. Direct connections are important in examining the actors' own agency efforts. The structural intensity of indirect connections that actors have established themselves in is also critical to investigate how social opportunities or constraints can vary as a result of the active agency of each actor.

Process of Inclusion

I use the communication network to illustrate the process of inclusion. Let me start by looking at the density measures for the communication networks over time. From the second column of the table 8.1, we can see that before the earthquake, the density was

0.0122. This means that when all of the 138 actors were taken into consideration, only 1.22% of all the possible ties were present.

Table 8.1. Density Measures of Communication and Collaboration Networks (t1-t3)

	Communication		Collaboration	
	Density (# of actors)	Number of ties	Density (# of actors)	Number of ties
Pre-Earthquake	0.0122 (138)	230	0.0040 (138)	76
	0.041 (76)		0.034 (48)	
Emergency Response	0.0544 (138)	1028	0.0125 (138)	236
			0.024 (102)	
Long-term Recovery	0.0631 (138)	1193	0.0162 (138)	307
			0.029 (105)	

There were 230 ties present at this time as is shown in the third column. Since the network in consideration has 138 actors, the maximum possible number of ties that the network could contain was 18,906. However, the number of actors in the connected part of the network turned out to be 76, which comprises of 55.07% of 138 actors. The smaller size of the connected communication network prior to the earthquake is contributed by two factors. One was many of the non-formal social groups only came into being after the disaster. The other is the pre-existing NGOs simply being isolates and un-connected to the network at this stage of time. The density for the connected network of 76 actors yields a measure of 0.041.

As newly established civil society actors joined the network during the emergency response stage after the earthquake, the size of the connected part of the network

increases to 138 actors for information exchange purposes. Theoretically speaking, the changes in the connected network size made it difficult to compare this post-disaster network with the one before the event due to the dependence of the density measure on the size of the graph (Scott 2001), or the number of *n*. Larger graph will have lower densities, other things being equal, than the smaller one because the maximum number of connections achievable is limited by the number of agents in the connected network. Mayhew and Levinger (1976) argued that there is a time limit that agents can invest in making and maintaining relations as it might become too costly for such investments. The number of contacts that can be sustained, therefore, declines as the size of the connected network increases. However, as the results in this research showed, the increase in the size of the connected graph from 76 actors to 138 actors produced even higher densities since the emergency response stage. Chinese civil society actors were not only able to sustain the 1028 communication ties from the emergency response period to the recovery stage, they were also able to establish more connections making a total of 1193 ties three years after the disaster. With larger size of the network, the number of contacts that actors formed and sustained particularly increased comparing before and long term after the earthquake event.

When compared with the measure before the earthquake, the number of ties for the emergency response period right after the earthquake went up from 230 to 1028, which was almost five times of the initiatives before the disaster. As the communication relationships among actors surged, the network became denser in the sense that 5.44% of all the possible ties were present at this stage as compared to 4.1%, when fewer actors were involved in information exchange in the previous period. This demonstrated that the agency freedom for actors to build and establish relationships was activated at a large scale. This step towards the completeness of the network was partially due to the emergence and creation of grassroots groups in response to the disaster. As these actors started to take action in reaching out to others, ties were being established among an increasing number of pairs of actors.

From the whole network point of view, information can now flow from a variety of channels among actors themselves depending on the embedded positions in the network. Let me use the example shown in figures 8.1 to 8.3 to break down such change process in the micro-fabrics of the action structure of the network.

Stage 1: Pre-earthquake

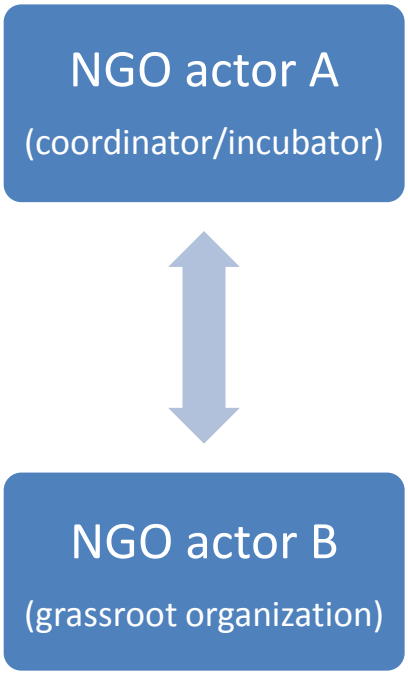


Figure 8.1. Process of Inclusion in Civil Society Action Structure before the Earthquake

In figure 8.1, I use "NGO actor A" as a representative of those functioning as information coordinator or nonprofit incubators, such as actor #51. "NGO actor B" will represent grassroots organizations in existence before the earthquake event, such as actor #24. At this first stage, a tie came into being by either the agency initiative of actor #51 or actor #24, or from the mutual "attractiveness" from both actors which is represented by a two way arrow. Regardless of the directions, the existence of one tie between these two actors is the starting point when network structure changes as information can now

pass on from one actor to another. In the case of actor #24 and #51, the direction of this particular relationship flew from #51 to #24 and was not reciprocated at the period before the earthquake.

Stage two (see figure 8.2) represents the emergency response period after the earthquake in this study. At this period of time, the communication relationship between actor A and actor B continued to grow as the latter actively sent out a request to the former and thus making their relationship mutual.

Stage 2: Emergency Response

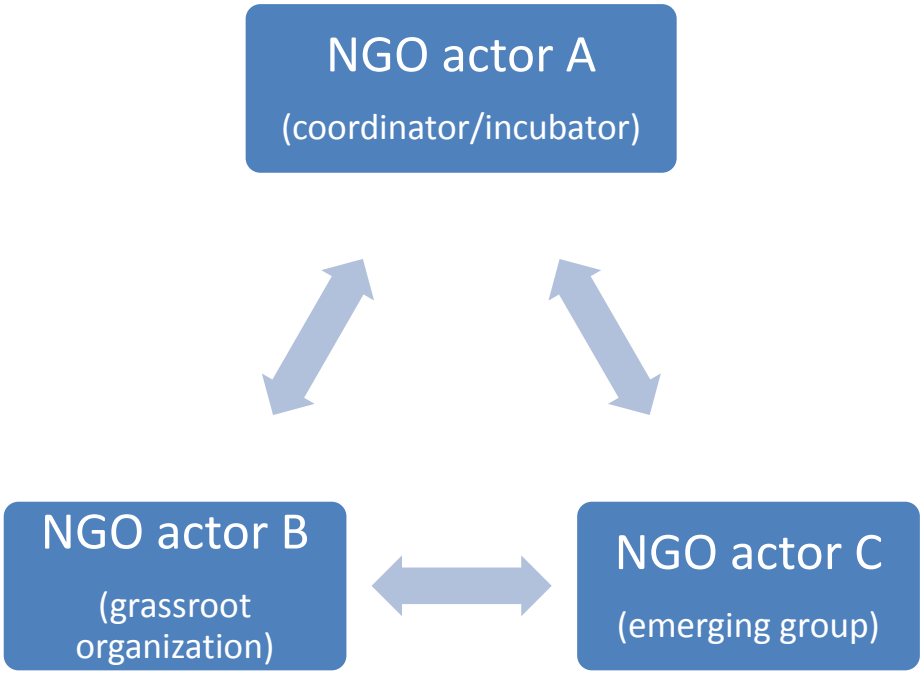


Figure 8.2. Process of Inclusion in Civil Society Action Structure during Emergency Response Stage

This is illustrated by actor #24 reached out to actor #51 and information can then be exchanged between the two parties. In addition, a new actor emerged as voluntary groups were established with initial purposes to assist in the emergency response efforts. This new actor is represented by "NGO actor C" in figure 8.2, and I will use actor #123 as a representative for the purpose of the illustration process. As this actor became more active in building new relationships with those who were already in the network, its own networks will expand as a result of the agency efforts. For example, suppose actor #123 first sought after #24 for information. The latter can respond and making their tie reciprocating and #24 also has the potential to be a mediator between the new actor #123 and the incubator #51. The facilitator can recommend actor #123 to actor #51 by passing on the information from one party to another. At the emergency response period, when many actors chose to rapidly expanding their immediate ego-centric networks reflected through the surge of out-degrees, it is also possible that actor #123 reached out to actor #51 by its own initiative, thus closing the triadic network circle among A, B, and C. On the other hand, #51 also willingly built a connection with #123 at this stage and this made the tie directions complete in this structure. As a result, information will flow faster in terms of directly from C to A rather than having to go through the facilitation of B. With the actions of all other actors in the network held constant, the inclusion of the new actor

C (#123) and its ties with the existing actors A (#51) and B (#24) were the primary micro processes that built the structural foundation of a social environment and also the reason behind the increase of density measure from 4.1% with 76 actors to 5.41% with 138 actors before and immediately after the disaster.

At stage three (see figure 8.3), during the long term recovery period, the action of another emerging group (NGO actor D) brought itself into the network.

Stage 3: Recovery

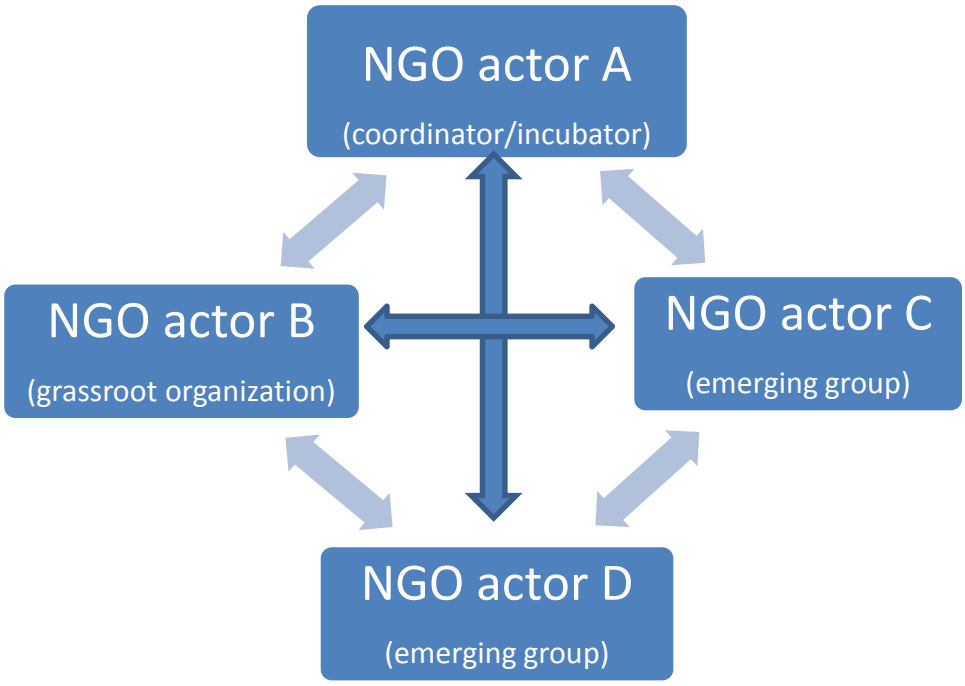


Figure 8.3. Process of Inclusion in Civil Society Action Structure during Recovery Stage

One example of an actor that became active over this time is actor #97. This can occur by it reaching out to all three existing members (A, B, and C) at the same time or through the mediation of one or more of the other three. This sub-structure finally became complete when information can flow "freely" diffusing from one actor to another as is shown in figure 8.3. The result of this process was the increasing density during the long term recovery stage when 6.31% of all possible ties were present. The total number of ties also went from 1028 to 1193 for emergency response period and recovery period respectively.

One point that I want to pay particular attention to is the importance of agency action in building up the communication social structure. Each additional tie or relationship in the network was the result of an initiation act of one actor. But the effects of one particular connection can be multi-folds in terms of the ways how information can be channeled throughout the network. The more ties were being established, the more inclusive the network became and information could be transferred both directly and indirectly from one actor to another. Take figure 8.3 for stage three for example, if actor "D" would like to reach out to actor "A", it could choose among the three options. One is to go through actor "B", or go through actor "C", and the third route is to build a tie directly with actor "A". In the third case, the choice to reach straight to actor "A" for

communication purposes would indeed increase the speed of information diffusion, but at the same time, this did not render the routes through “B” and “C” redundant. For the case of emergent groups newly established in the field of nonprofit sector, the emergency response stage after the disaster event might be too short of a time frame for these actors to be aware of the existence of actor “A”. In this type of incidences, the connection to either “B” or “C” would perform as medium channels between actor “D” and actor “A” so that the two could build a relationship with each other. This could not be possible if D had no ties to either B or C. Therefore, having a denser communication network in this disaster recovery context would provide increasing opportunities for each actor to receive and passing on information.

Another unique feature of this disaster recovery network was the phenomenon of a dramatic shift in civil society actors’ behaviors in terms of their connection-building activities both in the form of communication and collaboration during the emergency response period. The sheer increase in the number of communication ties from 230 to 1028 as well from 76 to 236 in collaboration networks for periods before and immediately after the earthquake appeared at the same time when massive number of new grassroots groups established themselves right after the earthquake.

Together with the already existing nonprofit organizations, it can be inferred that the disaster not only provided an impetus for collective voluntary act on the part of individual citizens but most importantly, the event "stirred up" a sense of agency for establishing grassroots groups and organizations to actively engage in building their "capability set" reflected in the emerging changes and the persistence of information network channels.

Such a persistence process is reflected in a relative gradual increase in density measures from 5.44% to 6.31% from short term response to long term recovery. Note that the increase in the number of ties from one time to another does not necessarily mean that tie establishment alone accounts for such a process. It was possible for ties to terminate and for ties to form at any particular period of time. This means that actors had the freedom to stop connecting to certain others while starting to build relationships with others. So the incremental density and tie measures were the result of tie formation initiatives overcame tie termination from one stage to another.

Over the longer term, this sense of agency was further transformed into a process towards institutionalization in terms of the overall trend in tie initiation. This can be illustrated by comparing the same measures across the communication and collaboration

networks over time. In this study, two kinds of network environments were being investigated. One is the communication network. The other is the project collaboration network. Essentially, actors were provided with the same list of names from which they can nominate to whom they had communication and collaboration ties with. "Collaboration" in this case, was defined as a type of relationship not only more intense in strength of connection but also representing the institutionalization aspect of the structural development. The two actors being involved in a collaborative relationship not only would share information and communicate with each other, they also would invest in more time, efforts, and resources towards projects that usually meant to last on the longer term through contractual agreements. So in this sense, the tie "strength" of a collaboration relationship is more intense than that of a communication tie. Notice that the density and the tie numbers of the collaboration network were lower than the measures for communication networks across all three periods of times. This is expected because a collaboration tie is more likely to be cultivated over time and requires more attention and resources for both parties to be engaged. One relationship built on project collaborations, therefore, reveals certain level of commitment of actors on both sides, thus marks a stage of institutional change in the structural environments. On the other

hand, a relationship built on communication and information sharing activities reveals the level of agency capacity that is being enacted through actors themselves.

Before the earthquake, there were only 76 collaboration ties being named and this contributed to the overall network having a density measure of 0.004 when all of the 138 actors are considered to calculate the maximum connections achievable. When considering only the connected network, only 48 actors were involved and the density measure is 0.034.

The emergency response period right after the earthquake also "jump-started" a drastic increase in collaboration ties when compared with the number from the period before. The number of actors participated in the connected network increased from 48 to 102, which comprises of 73.91% of the 138 actors. What this means is that the disaster response not only triggered the actors' agency participation in terms of their capacity in actively changing their own social environment, it also brought forth an increasingly high level of commitment for actors to dedicated to practice in the field long term. The surge in agency capacity building was accompanied by a jump in the level of commitment at the emergency response stage. In other words, rather than sequentially experiencing these two types of surges as in the normal incidences of a type of gradual formation of

collaboration ties from initial communication encounters, this case showed that the two types of networks could indeed grow at the same time frame.

The reason that I emphasize the uniqueness of such a process is that this observation revealed an important aspect of the emergence of the Chinese civil society in the context of this research. The existence of civil society in China had been debated among Western and Chinese scholars over a long period of time. One of the key issues that have made research in this area difficult is to reveal the dynamics of civil society in action explicitly observable while uncovering the specific ways revealing sustainable actions over time. What the parallel growth of both communication and collaboration ties in this study represents is that on the one hand, dynamics of action among the actors and their agency capacity can be illustrated through the overall changes in connections through density. On the other hand, the level of motivations and devotedness behind these actions can also be revealed by looking at the "collaborative-ness" among the actors. Action and motivation together contributes to the two key characteristics of the meaning of civil society. And the dynamics of both can be made explicit through such macro-level changes in tie quantity and density and thus marks as a preliminary step in understanding the emergence of civil society through the lens of actors.

Lastly, for the collaboration networks, we can see that the density and tie quantity both increased steadily from short term response to long term recovery. The measure of density increased from 0.024 with 102 connected actors to 0.029 comprising of 105 connected actors. The number of collaboration ties increased from 241 to 311. Overall, actors sustained their initiative in working on recovery related projects that not only could lead to social recovery but also community development in the long term.

Strength formation

So far, I focused my attention on the inclusion aspect of the structural emergence and endurance of the Chinese civil society in the context of crisis response and recovery. In this section, I turn to evaluating the strength of the connections thus being formed and persisted over time through the examination of the concept of *centrality*. I develop three aspects of examining the centrality position of actors and apply them to look at the evolution of the communication and collaboration network structures. I will finalize this section by providing a theoretical synthesis on the possible ways in understanding, building, and maintaining "resilience" from a "bottom-up" planning policy perspective focusing on civil society actors.

Local Centrality

Here, I particularly focus on actors with high level of incoming and outgoing ties over the three time periods. Such incoming and outgoing connections are also called actor "in-degree" and "out-degree" measures as was explored in the earlier chapters. It is now important to look at these measures in light of the concept of "centrality" for the following reasons. For in-degree measures, which is the number of incoming ties that a focal actor receives, often represent how "popular" and "well-known" the actor is among all the others in the network. Such is a position that gives the focal actor certain degree of power in terms of having the abundance of opportunities to choose to reciprocate. For out-degree measures, which is the number of out-going ties that the focal actor sends out at one point of time towards the remaining others in the network. The more nominations that an actor sent out to others, the more "influential" the actor becomes and may be more likely to be known and recognized by others. The act of reaching out often is associated with being in a state of in need and the actor who is highly active in nominating others will not be as "prominent" as those with high in-degrees.

It is necessary to further distinguish "centrality" and "centralization" measures in network analysis. A basic way to measure centrality is through the in-degree and out-

degree counts for a particular focal actor. Therefore, the degree measure is a formula to examine the point centrality of the focal agent by looking at the number of connections existing in its immediate neighborhood. Centralization, however, refers to "the overall cohesiveness and integration of the graph" (Scott 2001, 82). Within the context of this research, "centrality" is a measure to look at "point centrality" that centers on the immediate local environment of the focal actor. And for the idea of centralization, it is a lens through which to perceive the structural center of a graph, which can be around an actor or a group of actors (Scott 2001). With this in mind, I first examine the degree centrality output for communication and collaboration networks. Then, I will turn to centralization measures to develop a conceptualization of the overall changes being generated in the civil society domain after the disaster.

Degree Centrality

I have discussed group/organizational character traits of those who ranked high in both out and in-degree throughout the earlier chapters. Here, I will focus the attention on the overall distribution of actors' degree centrality measures. First of all, the average in-

degree and out-degree for actors in the communication network before the earthquake is 1.667 (see table 8.2).

Table 8.2. Communication Network Pre-earthquake Period Degree Centrality Measures

	Out-degree	In-degree
Mean	1.667	1.667
S.D.(Standard Deviation)	4.901	2.415
Min	0.000	0.000
Max	36.000	11.000
Network Centralization	25.244%	6.862%

This means that on average, actors at this point of time reached out to less than 2 others, and at the same time also receive less than two nominations from others. Note that the size of the connected network at this time was 76, which means that there were 62 actors (out of a total of 138) that were either non-existence or acted as isolates before the earthquake. However, these actors were still being counted as "dormant" or non-active actors in the network. Taking this factor into consideration, the relatively low average degree measures can be partially due to this incompleteness of the network structure itself.

With this context in mind, we examine the minimum and the maximum degree of the existing actors. The range of out-degree was 36 connections and 11 for in-degree. An actor will build a maximum of 36 communication connections towards others in this network while the maximum number of incoming ties for an actor to receive only reached

to 11. The standard deviation for out-degree is 4.901 and 2.415 for in-degree. In other words, there was more variability across actors in out-degree than in in-degree. Considering such characteristic from a whole network point of view, the out-degree centralization measure is 25.244% while the in-degree centralization measure is 6.862%. The percentage of this measure originated from two types of considerations. One is the structure of a perfect "star network". In this type of highly centralized network, only one actor has the degree of the number of the remaining actors in the network and all the other actors only have degree of one. The second consideration is the degree of variance of the network at hand as a percentage of that perfectly centralized "star network". Therefore, in the communication network at the time before the earthquake, we can see that the level of centralization for out-degree is higher than the centralization for in-degree. The first interpretation for this is that there was not significant amount of concentration in this structure. Both the out-degree and the in-degree centralization percentages were below 50%. Secondly, the higher level of variance of the out-degree centralization as compared to the in-degree centralization tells us that positional advantages were more unequally distributed in terms of out-degree than for in-degree. Certain actors tended to be intensively "influential" in terms of reaching out to the others in the network. On the other hand, the structure was less concentrated around those with

high level of in-degree "popularity" when compared to out-degree centralization. Interpreting these results within the context of communication and information exchange, we can conclude that at the time stage before the earthquake, the structure was more centralized around a particular set of actors who initiated connections towards others in the network. However, this does not have to be perceived as an expression of degree of "inequality" within the outreach network because this would also depend on the specific attribute types of those others that the concentrated set of actors initiate connection to. In other words, attention also needs to be paid to whom the communication ties were going towards. In the previous chapters, I have already illustrated that cross-group information sharing among the registered formal nonprofit organizations and the non-registered informal social groups could form a type of structural environment for building up capacity development for the latter.

Moving on to the period immediately after the earthquake, we can see that the average degree went up to about 7 as compared to 1 in the previous period.

Table 8.3. Communication Network Emergency Response Period Degree Centrality Measures

	Out-degree	In-degree
Mean	7.449	7.449
S.D.	18.228	5.707
Min	0.000	1.000
Max	136.000	37.000
Network Centralization	94.518%	21.727%

Given that there were a total of 137 other actors available for the focal actor to choose building communication partnerships with at this period of time, an average of 7 ties across all the actors in the network is a relatively low level of connection. With the emergence of grassroots nonprofit groups at this time, the number of communication ties that actors were able to build, on average, also increased. Further comparing the differences between in-degree and out-degree overall structures, the range of out-degree turned out to be significantly higher than the range for in-degree. The maximum number of outreach connections that an actor could build was at the level of 136 ties, while the maximum incoming ties one actor could have was only 37 ties.

Civil society actors at the emergency response stage turned out to be highly active in reaching out to initiate communication ties towards others and there could be incidences of high level of consciousness for actors to focus on building up "influence" through agency action. This can also be demonstrated by a higher degree of variability across actors in out-degree comparing to that of in-degree. The standard deviation for

out-degree was 18.228 and the measure was 5.707 for in-degree. The network centralization measures for both out-degree and in-degree increased dramatically at this period of time. For out-degree centralization in particular, the degree of variance for this network turned out to be 94.518% of that of a perfect "star network". This means that the structure for outreach activities was significantly concentrated towards a set of actors. Putting these structural outcomes into the context of disaster response situations, such a change process could signify a key direction of how the civil society as a domain perceived its role in time of crisis. Some societies might crumble apart with people suddenly lost their sense of direction in life and became incapable of dealing with such disastrous change in their lives, thus started to be completely dependent on the actions of others, such as solely rely on the help from the state. The network structure of that type of reaction would be one with many "isolated" actors with actions lack a sense of overall cohesion and integration. But for the Chinese case, pieces of evidence showed that civil society actors, understood as groups and organizations, revealed a highly concentrated level of cohesiveness of agency action shortly after the earthquake. The disaster not only did not crush the ability for people on the ground to respond, rather, it triggered an unprecedented level of integration among the actors in the civil society. In network analysis, a substantial amount of centralization would normally be interpreted as a high

degree of variation of "power" among individual actors, either in terms of their "influential-ness" (out-degree) or in terms of their "prominence" (in-degree). In the context of this research, I would like to argue that the kind of energy that the civil society actors collectively exuberated through their agency actions shortly after a crisis signified something that was greater and more embracing than the current understanding of "power". It can be referred to as a shared social energy for becoming resilience, a kind of active institution-building in terms of recognition of interdependency when face-to-face with dramatic changes with forces that go against such activities. In the Chinese context, the resilient energy captured by highly concentrated out-degree activities was able to withstand the catastrophic impacts of the disaster.

It is possible that some other societies might be showing such signs of resilient actions on the part of civil society actors, but it became a matter of time before their actions can be institutionalized and can be endured over time so as to be embedded as part of the "fabric" of the society functioning. In the context of Chinese disaster recovery over the long term, evidences again demonstrated that sustainability of the initial actions to build resilience on the part of civil society withstood the test of time. From table 8.4 below, the long term measures showed that, on average, actors had a degree of about 8, which is higher than that from the emergency response period.

Table 8.4. Communication Network Recovery Period Degree Centrality Measures

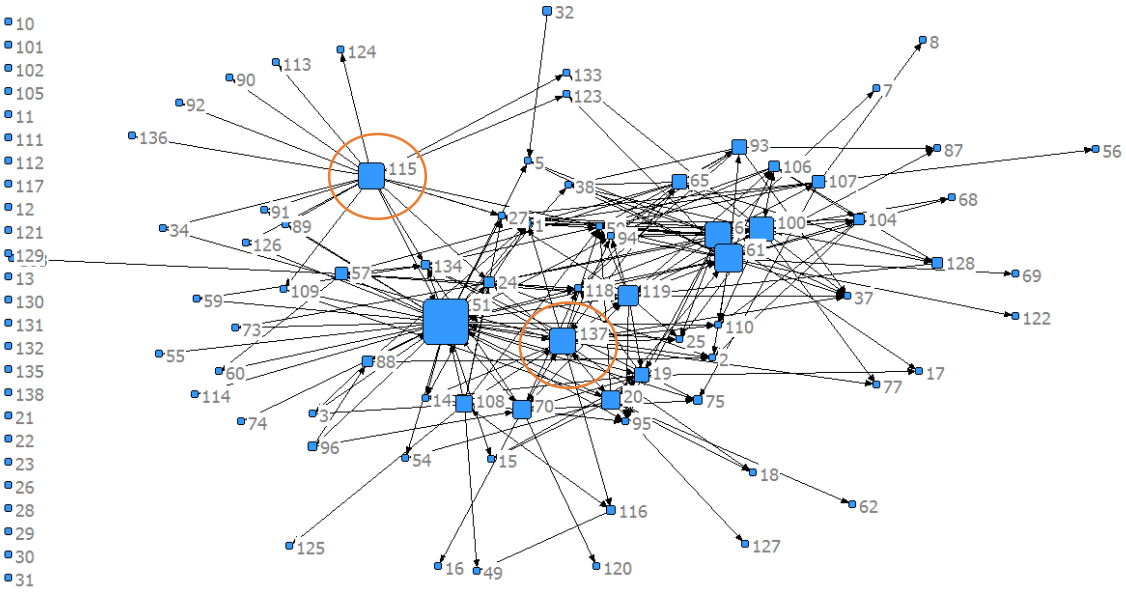
	Out-degree	In-degree
Mean	8.645	8.645
S.D.	19.015	6.014
Min	0.000	1.000
Max	135.000	34.000
Network Centralization	92.903%	18.642%

Although the quantity is low when considering the total number of possible ties that an actor can reach out to (137), comparing across time, this showed a consistent attempt on the part of the civil society actors to build up the communication network structure. If the increase in mean degree from before the earthquake to the short term response period can be interpreted as an emergence process of a restructured civil society domain after catastrophic disasters, then, the increase of the measure from emergency response to the long term recovery period can signify the endurance of civil society resilience. At this stage of time, the range and variability across actors in out-degree remained to be higher than those in in-degree. The whole centralization structure of the communication network sustained to be cohesive and integrated. Rather than conceptualizing the high concentration of out-degree around some set of actors as the degree of separation of power, in this research context, I argue that this can instead be interpreted as a construction process of a core resilient structure that was built upon agency energy inside the civil society domain.

Global Centrality

Local centrality, such as in-degree and out-degree, focuses on calculating the connections that are in the immediate neighborhood of the focal actor. By doing so, the indirect connections of the actor in consideration are generally ignored. In other words, examining degree measures is a way to determine the local centrality of a focal actor. However, this does not take into account of the indirect connections that the actor has by considering the network as a whole. When looking at the entire network, it is possible for a focal actor to occupy a central position by indirectly connected to many others in the structure but with fewer direct connections in its immediate neighborhood. In other words, "local centrality" does not automatically imply "global centrality".

On the one hand, the direct communication connections can be a primary source of information about the focal actor's agency action. On the other hand, an actor can reach out to many others to build their own immediate network connection but these other actors could turn out to be rather disconnected to the whole network. Take the communication network graph at the period before the earthquake as an example (see figure 8.4), we can see that actor #115 reached out to many others and thus had a quite large immediate neighborhood network (higher out-degree).

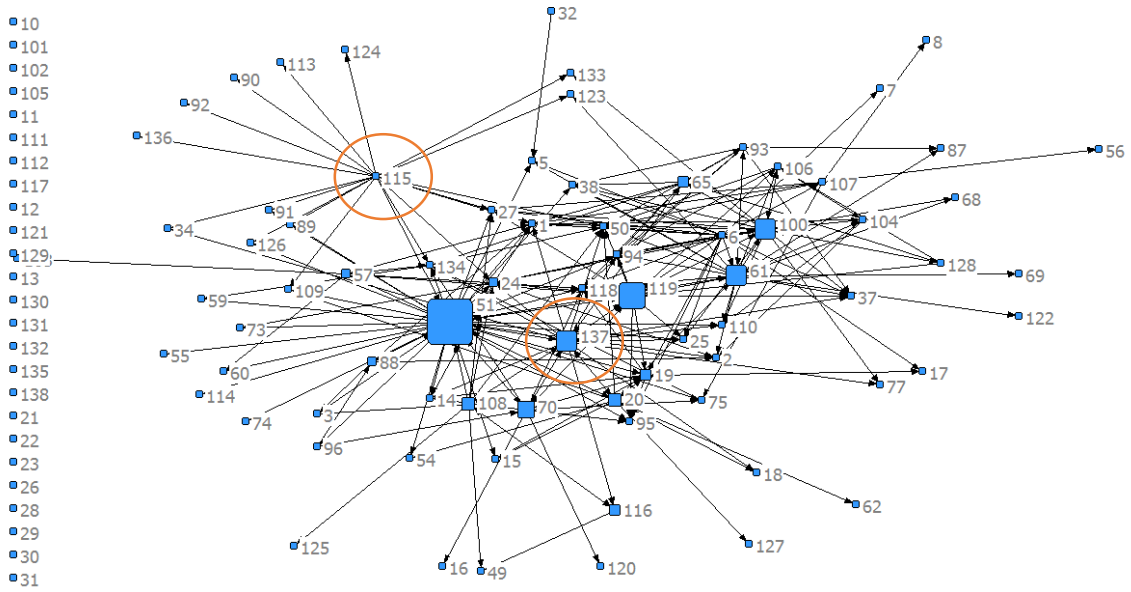


Node Size: out-degree. Higher out-degree represented by larger node size.

Figure 8.4. Pre-earthquake Communication Network Local Centrality (Out-degree)

If one looks solely to the degree measures to determine the centrality of the actor, we find that this actor ranked high in out-degree centrality compared to others in the network. However, a visual examination of the local environment of actor #115 (in Figure 8.4) showed that many of these other actors in its immediate neighborhood were mostly disconnected to each other. Not only so, these other actors were very loosely integrated into the connected part of the network as a whole. Several of them would turn out to be complete "isolates" if they were not having the communication relationship to actor #115. In cases such as these, actor #115 could be central in its own local neighborhood but not well connected when taking the entire network structure into

consideration. Figure 8.5 below shows that when considering betweenness measures alone, actor #115 indeed did not turn out to be globally central, as revealed by its node size.



Node Size: betweenness. Higher betweenness represented by larger node

Figure 8.5. Pre-earthquake Communication Network Global Centrality (Betweenness)

Take the structural position of actor #137 for example, it had exactly the same level of out-degree as that of actor #115 during the period before the earthquake. If local centrality measures such as out-degree are the determining factor for interpreting the "importance" or "power" in the network, then, actor #115 and #137 would be understood to be seemingly having the same level of influential-ness in terms of communication outreach activities. But the structural examination comparing the node sizes of the two

actors in figure 8.4 and 8.5 informed us that actor #137 was embedded in a local neighborhood that enabled itself to be easily connected to the rest of the network as a whole.

For information exchange and communication purposes, actor #137 was in a better position as compared to that of actor #115, particularly when there are various indirect pathways beyond the actor #137 immediate neighborhood. There is a higher possibility for the latter to receive and pass information on throughout the rest of the network. The network measure that can help in examining this kind of structural difference is the concept related to "global centrality", formally called *betweenness*[204]. It takes into account of the connected part of the network by focusing on the power of being a "gatekeeper" between various other actors. An actor who is locally central with high out-degree or in-degree measures may be secluded within its own neighborhood by exchanging information mainly with those it is directly connected to. But when switching the lens to examine the entire connected network structure, the same actor can be out of touch with the information flow from the rest of the network, thus making it locally central but not globally central. I now explore the results of betweenness measures for the

[204] Refer to Appendix 8.1 for further explanation.

communication network as a way to explore the intermediary role of actors' in relation to the idea of global centrality.

Communication Network Betweenness Centrality

***Pre-earthquake*[205]**

Figures 8.4 and 8.5 shown earlier provide a primary graphical comparison between actor's role of local centrality (out-degree) and global centrality (betweenness). Again, take actor #115 for example, it ranked high in reaching out to others for communication ties and this was illustrated by the color of the node that represents its actions. One can conclude that this actor is locally central because it initiated high level of communication ties with others. However, when the size of the nodes representing betweenness measure is brought into consideration, actor #115 played little role in being globally central when taking the whole network into consideration. This means that not much information could pass through this actor for it to play a "broker" role. In other words, it was in a position as having relatively high outreach activities (high out-degree) but still not in the "thick of things" when it comes to globally central (low-betweenness).

[205] Please see Appendix 8.1*A* for sample of UCINET output and descriptive measures.

In the context of information exchange and communication, the uniqueness and importance of actors such as #137 arises from the fact that in order for one actor to reach out to the other, it must pass through a set of agents that acted as intermediaries so that pieces of information can be transferred. To some extent, the higher number of "gatekeepers" existing in the network, the more inter-dependent of actors among each other for either information exchange or building communication ties beyond their local environment.

In the context of disaster response network environment, the existence of such inter-dependency would actually work in favor of getting information through and building communication ties across the entire network. However, it is still early to completely disregard the role for those actors with relatively high out-degree but lower betweenness measures. Note that the out-degree measures represent an active agency on the part of civil society actors to initiate communications with others. When actors who are highly enthusiastic in reaching out to others and generated high out-degree, but are lying less in between others to be "brokers", their unique role lies particularly in expanding the boundaries of the network. In figure 8.5, if it were not because of actor #115, actors #136, #92, #90, #113, and #124 would have been completely cut off from the connected network. Information that these actors produced would be permanently lost if it were not

because of the active agency of actor #115. Particularly in times after a catastrophic crisis, information from all kinds of civil society actors became valuable for an effective collaborative response. The actions of getting new actors to participate in network expansion were no less important than those who played the role of getting information through inside the network structure in time. Both types of roles would possibly increase the communication effectiveness of disaster response and recovery. Depicting graphically, actors such as #115 are usually located near the periphery of the network but at the same time, being completely intact with the densely connected part of the structure.

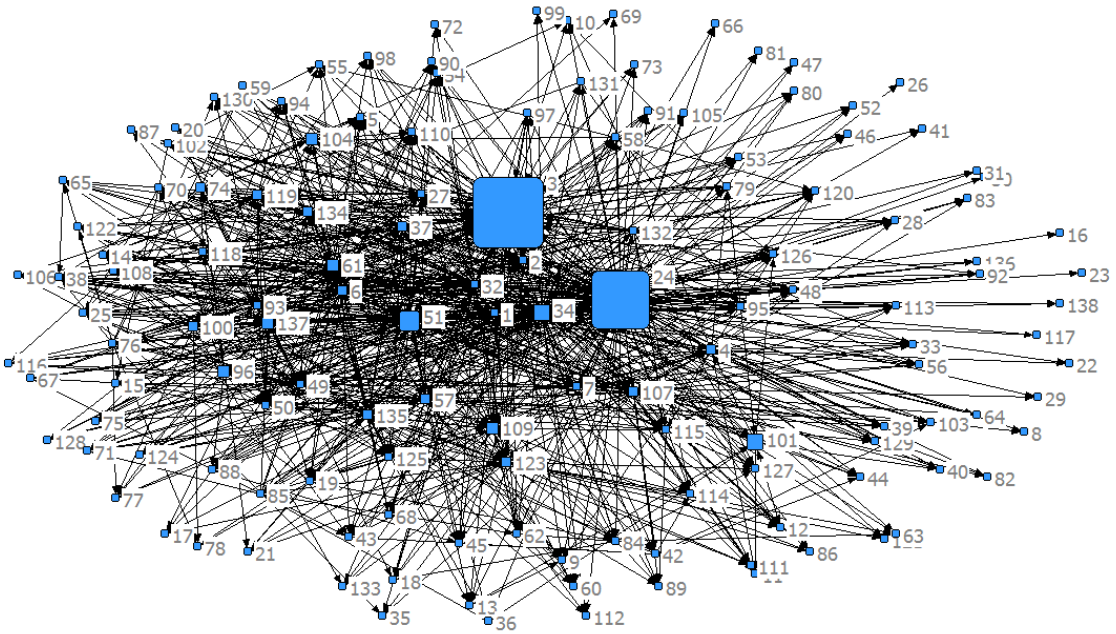
Further examining the node betweenness output measures, actors #51, #119, #61, #137, #100, and #70 ranked higher among all others before the earthquake. The higher node betweenness measure, the higher the frequency the focal node falls on the geodesic paths between pairs of actors. When this is the case, it means that there are more actors who will depend on them to get connected with others or to receive or pass information through. For the network at this period of time, the minimum node betweenness measure is 0 and the maximum measure is 515.167. There was a great deal of variations in actor betweenness. And at the same time, the betweenness centralization index turned out to be 2.71%, which was relatively low compared to the size of the network. This means that when looking at the entire network, few actors played the role of being the intermediaries

in between the geodesic paths among pairs of others. The six actors mentioned above did possess certain structural advantages in maintaining the information flow across the network as well as the opportunities for other actors to communicate with each other through them.

Emergency Response[206]

The figure below shows graphically the changes of the network structure shortly after the earthquake.

[206] Please see Appendix 8.1*B* for sample UCINET output and descriptive measures.



Size: Betweenness

Figure 8.6. Emergency Response Communication Network Global Centrality (Betweenness)

From the outset, what can be observed is that the structure became more cohesive with all of the earlier isolated actors joined the connected network structure. The more loosely detached structure such as those exemplified by actor #115 during the previous period dissolved through the structural integration process during this period of time. Visual examination of the network revealed that the network at the emergency response stage was characterized by having developed a densely connected core with a large number of pendants hanging on the outer periphery of the network. These “hangers” were drawn

into the structure through the actions of being reached out by others in the inner circle of the structure.

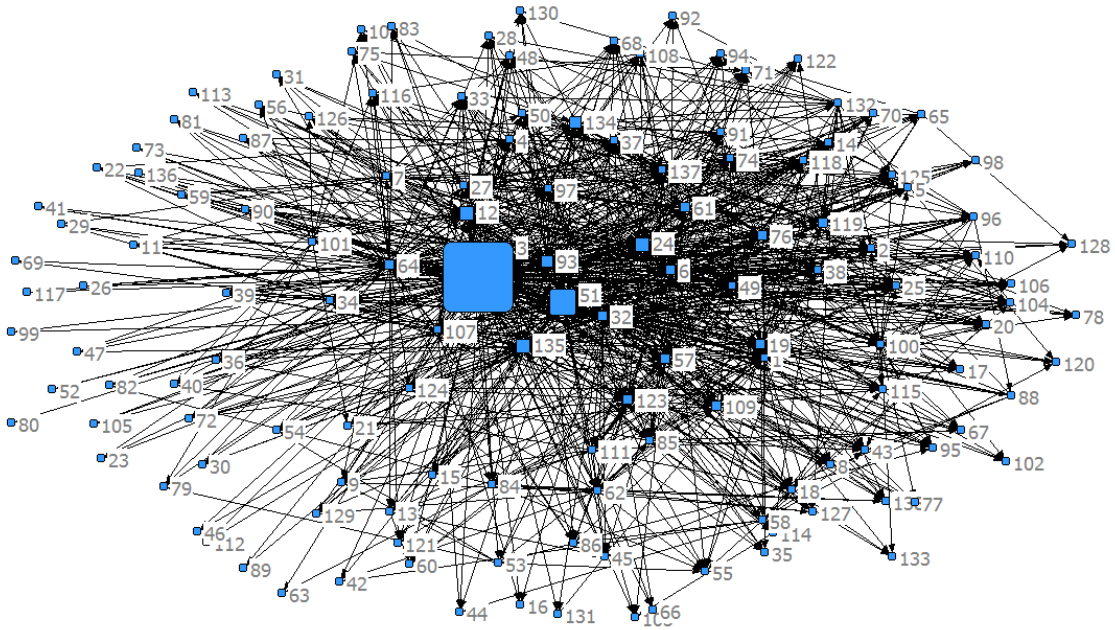
Examining the actor betweenness measures at this stage of time, there was a general increase in the numbers of those with higher levels of betweenness. One of the most distinguishing features of the structural changes was the emergence of newly formed civil society actors in playing the role of "brokers". The most notable ones were actor #3, #34, and #123, which used to be situated at the periphery of the network before the earthquake. After the disaster, all of these actors became active communication relationship-builders with relatively higher out-degrees. The betweenness measures for this period of time increased to 13.03% from 2.71% before the earthquake, which signified that more actors were concentrated to play the role of intermediaries by placing themselves on the path connections that were necessary for other pairs of actors to connect with one another. The proportion of times that actor #3 lied between other actors for information exchange turned out to be the highest. Actor #3 in the emergency response communication network, actively engaged in becoming the "hub" of exchange from which a significant amount of information would have to pass through it to reach to the targeted actors. At the same time, others also were highly dependent on #3 to get connected with other civil society actors in the network. In general, during the immediate

aftermath of the earthquake, what can be inferred is that civil society actors, particularly certain newly emerged grassroots nonprofit groups and organizations developed a capability to "revolutionize" the communication structure in such a way that not only the information coordination became more inclusive, but also the facilitation of information flow and communication exchange were made possible at the core of the network by the agency initiatives of these actors.

Long-term Recovery[207]

Visually comparing the communication network structure of the emergency response stage and the long term disaster recovery stage, we can see that the entire network remained to be inclusive of all of the 138 actors and the core also endured to be intact (see Figure 8.7 below).

[207] Please see Appendix 8.1*C* for sample UCINET output and descriptive measures.



Size: Betweenness

Figure 8.7. Recovery Period Communication Network Global Centrality (Betweenness)

Actor #3 continued to have the highest node betweenness measure among all others in the network. The centralization index of betweenness for the whole network climbed up consistently to 15.14% from 13.03%. This process allowed for a clear depiction of the actors whose roles were critical in maintaining the core structure of information exchange and communication. One possible top-down type of interpretation is that such actors held a significant amount of "power" in the sense that others were dependent on them to make necessary connections. By "top-down" interpretation, I mean terms such as "powerful" and "dependency" often being used to portray a picture of actors perceiving themselves

embedded in superiority-inferiority type of structures while purveying a sense of inherent competitiveness among individual actors. When looking at the role of civil society at the times of disaster response and recovery in the Chinese case, I argue that it is necessary to relax the need to define the roles from an utilitarian perspective by using terms such as "powerful" and "dependent" so as to reinforce the sense of competitiveness in terms of achieved beings among a set of actors. Such a framework is lacking the necessary conceptual tools to examine change as well as the driving forces of a critical point of shift of a social structure. More precisely, the emergence and endurance of the intermediary roles for those newly established informal civil society actors were the primary indicators showing that there can be another type of social energy at work during the time of change. "Power" and "dependency" can depict the possible outcome status (such as status and wealth) but not an evolutionary process. In the context of this study, I interpret the network evolution in terms of the increasing betweenness centralization measures as a result of civil society actors seeking agency action to withstand the catastrophic impact of a disaster. Therefore, instead of describing the network having an increasing amount of "power" in the hands of a set of some actors from an outcome-based point of view, the network could alternatively be interpreted dynamically as not only being "resilient" but also increasingly transformed in terms of actor betweenness.

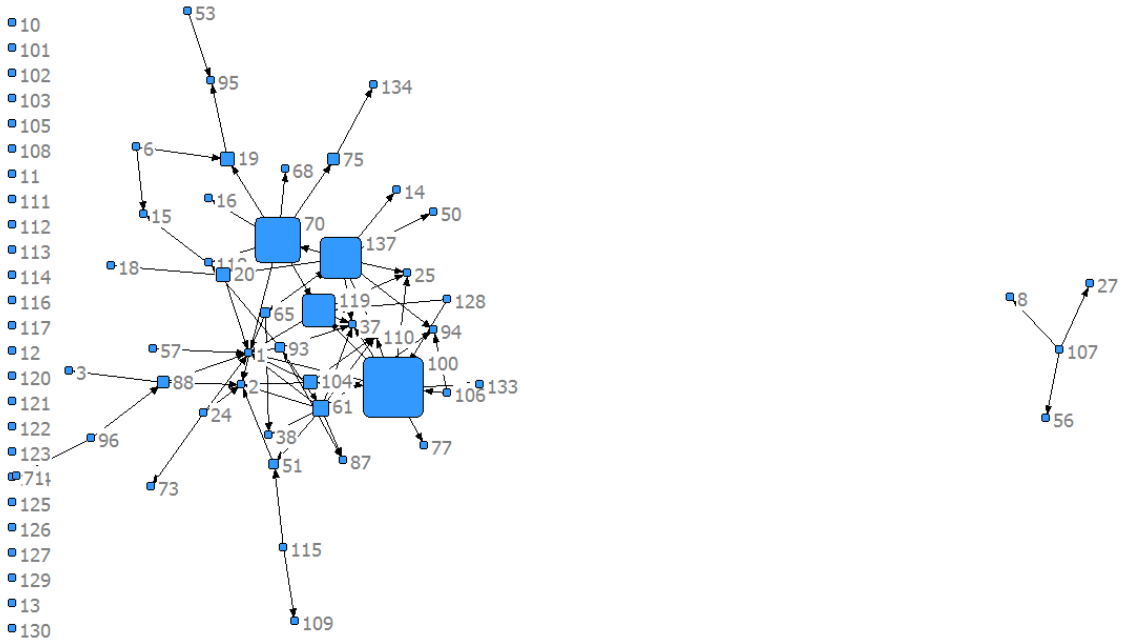
Collaboration Network Betweenness Centrality

Pre-earthquake[208]

This part of the exploration is to demonstrate that the term "collaboration" can be exemplified through a lens of looking at the role of actors and a lens of looking at the role of collaboration ties. The reason that I am distinguishing the nodes and the relationships here is to show that in order to understand the concept of "collaboration" in a changing structural environment, it is not only important to depict the dynamics of agency actions initiated on the actors side but also the roles of particular ties in shaping the actors' positions relative to others. In other words, the interactive nature of structures and actions is brought in to illustrate collaboration network evolution.

Let's first put on the lens of examining the network structure through the "eyes" of actors themselves. The following figure 8.8 shows the collaboration network before the earthquake.

[208] Please see Appendix 8.1*D* for sample of UCINET output and descriptive measures.



Size: Betweenness

Figure 8.8. Pre-earthquake Period Collaboration Network Global Centrality (Betweenness)

The different sizes represent the actors' levels of betweenness measures. We can see that actor #100, #70, #137, and #119 frequently lie on the geodesic pathways between all pairs of actors. They were important in the sense that many others had to first build a collaborative relationship with these intermediary actors in order to most efficiently extend the collaboration ties further towards others. Also when referring back to the out-degree measures discussed earlier, the actors who played an intermediary role with higher betweenness measures tended to reach out more to others as well. The overall betweenness centralization index turned out to be 0.19%, which is quite low considering

the number of actors in the network. Represented through the graph, the actors who played a key role in being the medium for connecting collaboration ties were all located within the main connected structure of the network. Aside from the "isolates", four actors were engaged in a collaborative relationship solely among each other but were disjointed from the rest of the other actors in the main network structure (see right hand side of figure 8.8). Actor #107 reached out to #8, #27, and #56 for project collaboration. But their actions were completely breaking off from the rest of the network. This could be one of the factors that contributed to the low level of node betweenness measure for this period of time. When disaster strikes, such a network structure would be especially vulnerable as there will be sets of actors who are completely cut-off from knowing what's going on from the majority of the other actors in the main collaboration structure. Opportunities for extending the areas of practice and for staying informed of other possible collaborative projects are also less likely to be accessible to this type of disjointed group of actors. Therefore, such a social structure will not be an ideal one when the goal is trying to engage as many actors for the purpose of preparing for crisis situations or disasters.

Emergency Response[209]

For the period shortly after the earthquake, actors with higher levels of betweenness measures across the entire network increased dramatically. #3, #24, and #119 occupied the top three positions in being the intermediaries for other pairs of actors to establish collaborative ties. The mean betweenness increased drastically from 0.935 to 26.812. Such is a primary piece of evidence showing that during emergency response, civil society actors quickly took actions in positioning themselves to facilitate making opportunities for collaborative connections among other pairs of actors. This also demonstrated that the Chinese civil society actors during the time of crisis were less prone to behavioral traits related to passiveness. Rather, they enabled themselves to build up each other through long-term-oriented relationships, such as commitment-oriented collaborative ties. The variation of betweenness measures was from zero to 35.5 during the pre-earthquake period, the variation went up to 1050.467 as the maximum betweenness measure at the emergency stage after the disaster. The overall network centralization increased to 5.53% from 0.19% before the earthquake, which means that after locating the geodesic paths between all pairs of actors, more ended up to be situated on a high number of such pathways so that others can become collaborate partners

[209] Please see Appendix 8.1*E* for sample of UCINET output.

through their intermediary role. Observing graphically (see figure 8.9), we can see that the main network structure became more tightly knit together with a set of actors that were central in the sense that others became more dependent on them to establish collaborative relationships.

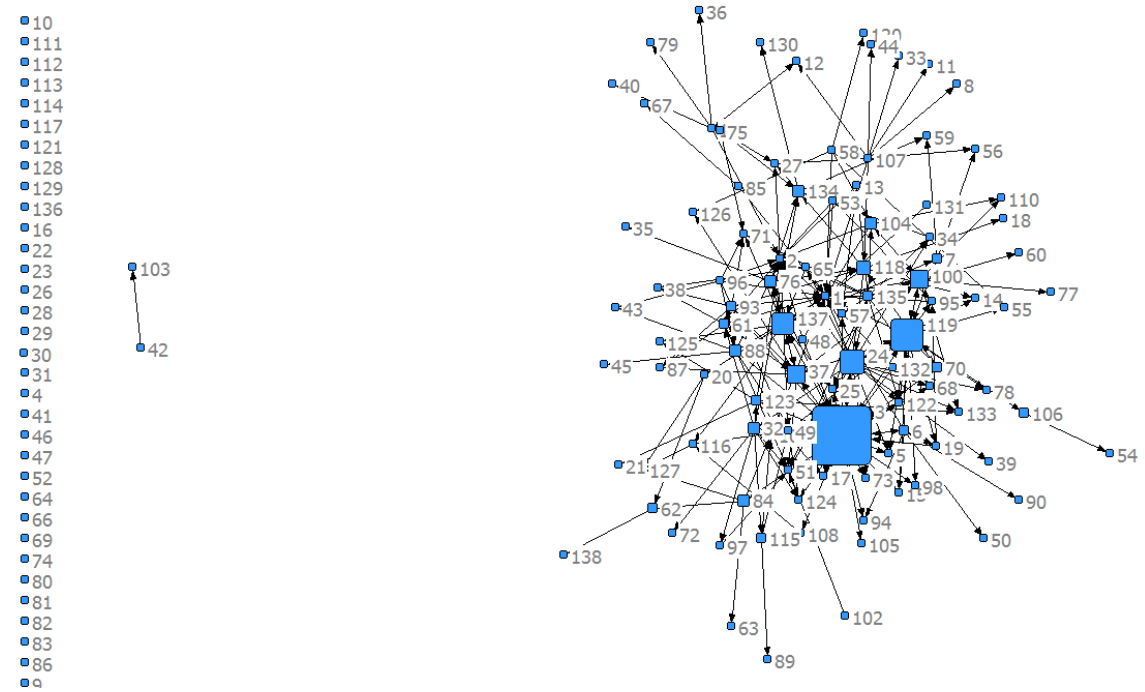


Figure 8.9. Emergency Response Period Collaboration Network Global Centrality (Betweenness)

However, the collaboration between two actors (#42 and #103) can be found to be disconnected from the majority of the actions in the main connected network. Also, compared to the inclusiveness of the communication network structure at this stage of

time, there were still civil society actors acting by themselves (as “isolates”) without participating in any type of collaborative activities. This is because collaboration relationships inherently require more familiarity between partners and higher level of commitment in both resources and efforts than those making communication and information exchange ties. Those engaged in collaborative projects also would have to develop a long term vision for practicing in the field. Given these factors, it is safe to expect that the pace of cohesiveness development of the collaboration structure might experience a certain degree of time lag as compared to its communication counterpart. The unique side of the collaborative structural evolution at the emergency stage is that the main component of the connected part of the network became further compacted and at the same time, actors were more engaged in facilitating long term participation through collaborations among pairs of actors. This shows that in this study context, civil society actors, when facing the turning point of under crisis circumstance, did not tend to scatter themselves to engage in more isolated activities. Rather, they actively sought out each other for project commitments thus showing a significant amount of interests in the long term social recovery for the local communities. Therefore, on the agency side of interpretation, what can be inferred here is that the Chinese civil society showed a high level of willingness and courage to relate to each other through collaborative synergies at

the moment of crisis. The increasing betweenness index measure is the key piece of evidence that actors were not only interested in getting together but most importantly, showed an unprecedented degree of openness towards each other by taking upon intermediary roles for facilitating project collaboration ties for others throughout the network. Trust among actors can also be inferred when they allow themselves to depend on the medium role of certain set of central actors for building expansive collaboration ties.

Long-term Recovery[210]

In the long term recovery stage, one of the most distinguishing structural changes at this period of time is the increasing integrated-ness of the main connected component of the network. From the graph below (see figure 8.10), we can observe the disappearance of any disjointed section accompanied by an expansion in network inclusiveness.

[210] Please see Appendix 8.1*F* for sample of UCINET output.

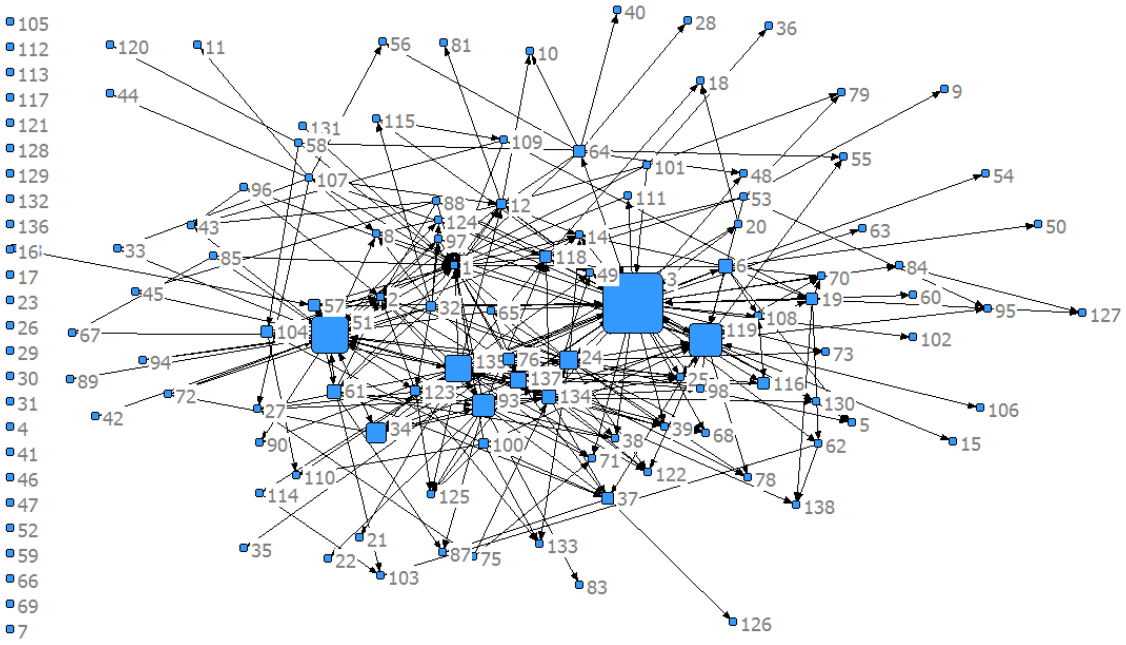


Figure 8.10. Recovery Period Collaboration Network Global Centrality (Betweenness)

Actors #3, #51, and #119 continued to rank among the highest three in betweenness measures. While the mean of the whole network increased from 26.812 to 48.051, the variations in actors' betweenness further increased.

Table 8.5. Actor-level Betweenness Descriptive Measures for Communication and Collaboration Networks (t1-t3)

	Communication			Collaboration		
	Mean	Min	Max	Mean	Min	Max
t1	13.420	0	515.167	0.935	0	35.5
t2	52.978	0	2462.522	26.812	0	1050.467
t3	44.913	0	2844.578	48.051	0	1451.303

The network as a whole became more centralized in terms of betweenness as more collaborative connections were made with the aid of intermediaries. Such a process showed that civil society actors remained to be engaged in developing collaborative projects beyond the emergency response period to the recovery stage. This indicates that the drastic increase in the number of actors taking up the role of facilitating collaboration relationships immediately after the disaster was not merely a temporary phenomenon of voluntarism spurred at the heat of the crisis moment. The collaborative energy turned out to be sustained by actors' willingness and dedication to make long term connections for others across the network. This dynamic was revealed by the increasing number and concentration of intermediary roles taken by civil society actors reflected by their betweenness centralization index.

Emerging Resilience Structure: Empowering, Strengthening and Sustaining

Compared to "local" centrality measures reflected through in-degree and out-degree within a focal actor's immediate neighborhood, the betweenness centrality measures provided insights into a process in search for the sources of "global" strength of

the Chinese civil society domain after the earthquake. In other words, when taking a step back and observe the network structure as a whole, one can depict a social process showing the conditions for emerging role formation for those actors who positioned themselves on the most efficient pathways—geodesic paths—among all pairs of others. If the degree centrality helps us understand the rise of a civil society resilient structure from the agency actions point of view, the betweenness centrality expands that understanding into the structural positions among which the actors were embedded in.

It is useful to adopt an analogy of the emergence and growth process of the civil society resilient structure before and after the earthquake. Such a process can be thought of as the physical development of a human being. The earlier examinations of the transformations in degree measures, together with the changes in density, reciprocity, transitivity, and clustering indices all originated from the agency of actors themselves. The recognition and the willingness of actors resemble the flesh of the human body. But without a sturdy bone structure to hold the different parts of the body together, the body as whole will not be able to stand up, grow and move forward.

The betweenness positions I have just examined can be seen as part of the "skeleton" feature of the body. The intermediary role played by certain set of actors that

facilitated the connections between other pairs of actors represents the emergence of a "bone" structure that is critical in maintaining the posture of the human body. Putting such an analogy into the context of this research, this section demonstrated that such a "bone structural development" process can be indexed through the identification of betweenness centrality measures.

The following table 8.6 shows the betweenness developmental features of the communication and collaboration networks.

Table 8.6. Communication and Collaboration Whole Network Betweenness Centralization Measures (t1-t3)

	Communication Network (motivation)	Collaboration Network (behavior)
t1	2.71%	0.19%
t2	13.03%	5.53%
t3	15.14%	7.59%

First, note the drastic change in the overall centralization from the period before the earthquake to the emergency response period in both types of networks. The crisis situation generated a type of positive synergy so as to draw the actions of individual actors together through the emergence of an increasing number of intermediaries. Immediately after the disaster, it can be concluded that the "bone" structure of the civil society body was being significantly strengthened as compared to the period before. At this point of time, it is still difficult to tell whether such development can be stabilized or

sustained. It is over the long-terms recovery stage from which we can tell that the growth process had showed signs of being maintained through the actions of civil society actors. The betweenness centralization measures for both the communication and the collaboration networks kept a steady increase throughout the recovery period. In this study, two types of civil society actors' functioning were being investigated. One was the opportunity to communicate and exchange information. The other was the opportunity to conduct project collaboration activities. Thinking in terms of the analogy of the growth of a human body, these two types of structures can be part of the basic human functioning when the flesh and the bones are in place. On the one hand, actors communicate with each other based on a motivation of providing the support and assistance needed after strike of a catastrophic disaster. On the other hand, actors further engage in project collaboration behavior to commit themselves in certain field of practice.

If the inception and developmental processes of Chinese civil society domain after the Wenchuan earthquake can be thought of as the growth of a human body in our analogy, then the infusion of motivational and behavioral developments are of necessity to achieve the full functioning when such a human being is starting to recognize his or her relational choices as part of the capability set. Inside such a capability set, the actors can choose from all kinds of grouping and positional arrangements with other actors and

it is from this process that the human being as a whole develops intelligence and personality. “Intelligence and personality” in this context, can be interpreted as the different ways for Chinese civil society actors to form communication and collaboration relationships in response to the disaster event. In the later section, I will specifically discuss such development in terms of group roles and positions. For now, let’s continue exploring the differences in motivation and behavioral functioning in structure-building over time. Comparing across the communication and the collaboration networks, we can see that more actors after the earthquake engaged in being the intermediaries for communication among pairs of actors than in collaboration. And the growth process for information exchange appeared to be faster than project collaboration.

In network analysis, degree and betweenness centralization measures are often used to index the sources of “power”, “inequality”, and the occupation of “advantageous and disadvantageous” positions. These concepts are usually adopted to depict the characteristics of structural embeddedness of actors and how these characters infer degrees of “power”. Here, using the results from the current analysis, I further explore the meaning of these concepts. The network measures I have discussed at each point of time were essentially outcome based in indexing concepts such as “power”, “inequality” and “advantageous and disadvantageous” positions. However, when the purpose is to

understand a process over time, a lens that focuses on the static side of the interpretation tends to ignore the dynamics of change. In the context of crisis response and recovery in the Chinese case, the process of interest is one that focuses on the emergence and development of a civil society resilient structure upon facing catastrophic changes. From the perspective of civil society actors upon exercising their agency freedom after the earthquake, terms such as "power", "advantages", or how much others in the network will "depend upon" others are more appropriate to be understood from a procedural-action point of view. This alternative lens examines the structural changes connecting different point of time through the concepts of "empowerment", "strengthening", and "resilience", which put an emphasis on the capability of actors themselves to enact on their agency freedom upon realizing the available opportunities. These interpretations can also be thought of as a different facet of "power" that is seen through the civil society perspective in the Chinese context.

From a procedural lens in looking at the centrality measures explored both locally and globally, let me now provide a preliminary conceptual framework in summarizing the process of institutional change in the domain of Chinese civil society. Tables 8.7, 8.8, and 8.9 summarize the changes in the out-degree, in-degree, and betweenness

centralization measures for communication and collaboration networks before and after the earthquake.

Table 8.7. Communication and Collaboration Network Local Centrality (Out-Degree Centralization): Emerging Resilient Structuration

	Communication Network (motivation)	Collaboration Network (behavior)
t1	25.244%	6.212%
t2	94.518%	16.362%
t3	92.903%	22.606%

Table 8.8. Communication and Collaboration Network Local Centrality (In-Degree Centralization): Empowerment

	Communication Network (motivation)	Collaboration Network (behavior)
t1	6.862%	6.948%
t2	21.727%	16.362%
t3	18.642%	17.460%

Table 8.9. Communication and Collaboration Network Global Centrality (Betweenness Centralization): Strengthening and Sustaining

	Communication Network (motivation)	Collaboration Network (behavior)
t1	2.71%	0.19%
t2	13.03%	5.53%
t3	15.14%	7.59%

Observing the patterns of changes over time, I conceptualize two aspects of change progresses in this context. One is structural change from the period before the earthquake to the period shortly afterwards. Based on what have been examined so far, this time frame was dominated by an emerging dynamic of active relationship-building

on the part of informal and formal civil society actors. The communication network experienced a drastic change in that the whole connection structure became highly centralized around a group of actors. The same dynamic happened for the collaboration network, but with a lesser out-degree centralization. The second critical aspect of change was exemplified from the short term response stage to the long term recovery stage. Compared to the emergency response dynamics, the recovery stage was characterized by the sustainability of the structures. The initiation of information exchange and communication ties became slightly less centralized around a certain set of actors. And at the same time, actors were still highly engaged in reaching out for collaboration ties. This revealed that the civil society actors recognized long term recovery period an important stage in making commitment in the field through establishing project collaborations.

Now, given these characters of change, one task to be taken in summarizing this part of the investigation is to conceptualize these patterns in light of understanding the role of civil society through crisis. The key came down to capturing the active synergy for initiating communication and collaboration ties immediately after the disaster as well as the willingness to stay engaged over a longer period of time. Considering the relatively low levels of out-degree activity concentration before the earthquake, it is safe to conclude that there was a particular type of process characterized by an emerging social

structure being self-constructed by civil society actors, in dealing with the catastrophic impacts of a sudden disaster. Such a process was completely action-oriented upon facing extreme difficulties brought by a crisis. And it was sustained by commitment-oriented behaviors, such as when both informal groups and formal nonprofit organizations proactively reached out for long term project collaborations. Therefore, by taking these two types of behavioral orientations into consideration, the dynamics of what happened on the actors' side of picture, or more precisely within the immediate neighborhoods of each actor, was a process of "emerging resilience" structuration. I use the concept of "resilience" here because it closely captures the dynamics within the civil society before and after the earthquake. On the one hand, the disaster itself was an extremely tragic event that has often been associated with extreme stress and discouragement. On the other hand, the catastrophe was encountered by a source of collective energy that encouraged agency actions for connection and institution-building. This energy was also being enacted by actors inside the Chinese civil society domain whose lives were also being impacted by the tragic event. The term "resilience" brings together these two opposing waves in order to signify the strength of action and an emergence of a resilient structure on the side of the civil society domain.

At the same time that a resilient civil society structure emerged through the active agency of relationship creation, another process was also at work. And this was the in-degree centralization which represented the concentration of those actors that were approached by many others in the network. The emergence of these actors was often being interpreted as being "popular" and "prominent" among others. The fact that this increasing trend in in-degree centralization happened at the same time with the trend in increasing centralization of out-degree rendered the need for a closer look at conceptualizing this process. Recall that the emergency response period was also accompanied by the emergence of numerous informal social groups. Actors such as #3 and #123 not only actively built up their immediate neighborhoods in terms of outreach activities but also were approached and trusted by an increasing number of remaining others in both the communication and the collaboration networks. Such a simultaneous progress in out-degree action centralization and in-degree "popularity" centralization with both informal and formal groups inside the civil society was the result of a dynamic that goes beyond by simply characterizing certain actors are gaining "power" through their "prominence" status. One concept that is appropriate to adopt to take into account of both patterns of changes in out-degree and in-degree centralization is the term "empowerment". This is because at the same time when the actions were concentrated in

reaching out towards others, civil society actors themselves, regardless of their registration status were also able to attract the attention among each other. In the context of responding to disasters, such can be categorized by a process of building up each other's ability to withstand change through the construction of communication and project collaboration relationships. For those newly emerged civil society actors in particular, such a connection-building process can be an empowering one as it opened up further opportunities in constructing ties with actors beyond their immediate neighborhoods. One key difference between using the term "empowerment" and "prominence" in this context is that the former also involves a dynamic progress in high levels of proactive agency efforts on the part of actors themselves, while the latter predominantly focuses on a static view of status which can or has already been acquired by an actor at a particular moment of time.

Moving beyond the focus on the immediate neighborhoods of actors towards a view of the networks as a whole, the betweenness index as global centrality measure investigated here provides a backdrop for conceptualizing the next stage of civil society development. The similarity in the patterns of increase from the emergency to recovery period when compared to the local centralization measures revealed that the process of empowerment was being further sustained through actors adopting the roles of critical

facilitators for relationship construction among pairs of others across the entire network. From the perspective of civil society actors, this was a level where the strengthening of the tie structures happens. This perspective in describing the development of the civil society domain provided an alternative point of view in looking at the sources and concentration of "power" and "inequality". Given the context of this research study, the story of the growth of civil society domain started out with "resilience" and "empowerment" from an agency action interpretation perspective. While it is true that certain actors did play a central role in mediating the connections among pairs of others and thus exemplify features of their "powerful" status in making others dependent on them, this understanding undermines the process from which the structure as whole came into being in the first place. The condition for the development of both the communication and collaboration networks was one that characterized by emergent civil society structures and continued concentration of actions for actors' empowerment within a disaster time frame that normally tend to debilitate all kinds of proactivity. When such a condition is taken into consideration when summarizing the "global" change dynamics through actor betweenness, "power" should be alternatively conceptualized as the level of resiliency strength when recognizing the action taken by civil society actors and their perspective on growth and development over time.

Over time, the strengthening or the sustenance of this emergent resilient structure was provided by civil society actors proactively playing the betweenness roles mediating the communication relationships among each other. From the results of the betweenness measures for the emergency response period, actors #3, #24, and #51 occupied the top three positions in being such intermediaries. They remained to be the three most important providers for connecting others all the way into the long term recovery stage. Looking forward, the informants from these group actors held a type of vision that was anchored in the broader civil society capacity-building and social development arena beyond disaster response and recovery. I use the following sections to qualitatively illustrate the meaning of "resilience" in light of the perspective of Chinese civil society actors after the earthquake.

Resilience as a Learning Process, Risk Adaptation, and Transformation

If the earlier investigation of the structural characteristics of civil society self-organization process and the construction of the institutional climate can be seen as precedents of a resilient and transformed nature of the Chinese civil society, this section

specifically deals with the driving forces and motivations in how actors came to realize and continue the process. It investigates a stage where civil society actors actively and willingly engaged themselves into a capacity-building process to prepare for the future. The factors that motivated and enabled this learning process can be understood as the pre-conditions under which transformational change were perceived and took place in the civil society domain.

The Case of Actor #3 (SG3)

For actor #3, I present a framework in terms of its learning process in coping with risks. The reason that I used the term "risk" rather than "disaster" at this point is because the former purveys a sense of expectation and preparedness awareness from the perspective of actors and it is closely related to the concept of "resilience", which was developed as one of the central themes of this study. Essentially, in this qualitative section, the framework is reflected through the examination of individual participant's experiences from group actor SG3.

Each of the participants lived through and experienced a certain aspect of the learning process and I will start out by looking at of the younger participant (SG3-01).

One of the frustrations shared by the participant when reflecting on her recent experiences on building the "training and study platform" over the long term recovery stage was regarding the issue of possible ways in evaluating the level of awareness in civil society formation and development from the perspective of actors themselves. This observation arose from her role as being the coordinator of the consecutive phases of training and study exchange programs prepared for civil society groups and organizations performing locally with long term intention in disaster recovery.

> In fact, for this current training and study program, I still do have frustrations regarding it. This is because some of the outcomes in the form of recognition and awareness cannot be measured. How big is it, and whether it is effective, none of these can be measured? And for a training platform like ours, there will be about 50 people attending each time. So what kind of outcome would we want to see from our activities? For example, would our goal is to develop people through our training? Or even more broadly, to inform the general public of the awareness of such a concept and their recognition of NGOs? So this is an issue that our second phase of the program will have to face. We can't keep following the same path as before, there must be some kind of change. This is a problem. (SG3-01-18[211])

Note that the essential issue that was being discussed here could be summarized as one regarding the eagerness to discover an evaluation mechanism that could be used to explicitly pinpoint the outcome of the training activities coordinated and conducted by the group. Two types of outcomes were prioritized by the participant. One was the

[211] For Chinese script, please see Appendix 8.2.

development of certain key actors represented by their participants with in-depth understandings of the field of Chinese civil society. Essentially, she (SG3-01) meant the creation and activation of more well-informed civil society group/organizational actors. The other one was regarding whether the program was being informative towards general public's awareness of what "NGOs" were, and eventually understanding the concept of "civil society" in general. Such an "output"-oriented approach in looking at the group's role since the disaster event and towards the group's future development conveyed participant's personal devotion and commitment in strengthening the capability of civil society actors in the long term framework that extends beyond the disaster recovery phase. It also sent out a message for the need of evaluation tools available according to the intended achievements from the perspective of the actor. I would like to argue that both types of outcomes that she mentioned were essentially relationally-based as the growth of one civil society actor could not be singled out from its interactions with all other actors in the field. Different types of connections were intertwined with the group's self-identification process as it transitioned from emergency response stage to recovery phase. At the cognition level, an awareness of the functioning of civil society could also be processed through the relationally-dependent actions across actors.

The second issue being perceived by the young participant through her experiences was her personal emotional bonding as the group went through the different phases of structural development after the earthquake event. From the emergency response stage to long term recovery stage, the functioning of the group actor had transformed from an initial "information exchange platform", a "service platform", and finally towards a "learning platform". Although she considered these phases as "important" group achievements, what became even more significant was that she perceived them as an "emotional contact platform"[212]. As she put it:

> You know, especially at this particular time when many more of us are working and surviving in the field of NGOs, our relationships need the aspect of emotional attachment to be maintained. This way, you know that you are not alone. We need all kinds of channels to help us realized that you are not alone. This is an aspect of our work that would comfort me and made me proud every time I think of it this way. (SG3-01-19[213])

Such an account conveyed a significant willingness to persevere as she made the commitment to the "NGO" development of China. Just like the senior participant (SG3-02), the source of their strength to be consistent in practicing in the civil society domain became a matter of where their hearts belong. The emotional place that eventually touched them the most was the things they accomplished together with others who shared

[212] For detail, refer to Appendix 8.CaseSG3.6(1).

[213] For Chinese script, please see Appendix 8.3.

similar passions and desires in the field, and it was also the relational aspect of connections that built up the "things" that touched upon the "warm" corners of their hearts.

Let's now turn to the learning experiences of senior participant (SG3-03). Different from the emotional aspect of the process being reflected by the young participant, the senior relied more on her perceived work functions of the group as a whole. Essentially, she focused her reflection on the primary purpose of existence of SG3. On the one hand, as long as there would be "NGOs" working in the disaster area, the group should continue functioning. The reason, from her perspective, was that many of the groups/organizations just emerged after the earthquake. Depending on the needs for information gathering, meetings, trainings, and temporary working places increased over time, the function of the group as a provider for these services should be preserved. On the other hand, if none of the "NGOs" were in existence anymore, the works of the group would terminate accordingly. The senior participant provided her point of view on the matter of the group's future[214].

[214] For detail, refer to Appendix 6.2.CaseSG3.6(2).

The level of commitment for the group to provide services for civil society actors is also reflected in her not considering changing the focus of practice for the group. Devoting to disaster recovery tops the group's priority and this phase after the earthquake was perceived as a rather long period in terms of timing and the service works needed to be provided accordingly. Therefore, regardless of the perspectives being approached by the participants of actor SG3, the common factor that all of them treasured were the relationships and connections built with those other civil society groups and organizations over time. The interpersonal and inter-group/organizational relationship growth became embedded in the learning processes when facing such a catastrophic disaster as well as when projecting the future trajectories of the group.

The Case of Actor #51 (NGO51)

"Resilience", in the case of actor NGO51, was revealed through the development of a type of supportive social environment inside the civil society domain, not only in terms of facilitating general communication ties among actors, but also the offering of available tools and opportunities for further capacity growth of civil society actors in China. From the perspective of the participants of NGO51, the communication platforms were intended to build up the necessary awareness and recognition of each other's works

among civil society actors, while the capacity development platforms would provide long term guidance and assistance in the institutionalization process of the emerging grassroots groups. So far, we have seen that both of these two platforms illustrating resilience-building arose out of the bottom-up initiatives from actions of civil society actors. From the particular experience of actor NGO51, achieving resilience was also a mutual learning experience on all parties involved in a collaborative relationship. It was generated from within civil society domain and could be facilitated by actors inside the state and market domains. The following account depicted an example of the most primal stage of such a learning process:

> To be honest, this field isn't that big, we would all have more or less kept in touch with each other from previous experiences in doing things together. We would casually chat on these kinds of things. It's because we will organize all kinds of activities in Chengdu and we will also publicize our works to others. Through the process, we will introduce our programs and what we are doing with the current program. Some might become interested after hearing about it, and they would come and talk to us afterwards.
>
> Many groups/organizations would like to develop themselves, but could not find a good format. Or in other words, they don't know which paths to take. Just like what you've mentioned about (actor #4) earlier, they have everything but just don't know which direction to go and seemed to be lost. Our role is to help these kinds of start-up grassroots groups, if they are strongly willing to devote into this field of work, and give them a hand to find a good way to grow. We will walk with them on this journey and share our experiences. (NGO51-01-15[215])

[215] For Chinese script, please see Appendix 8.4.

Therefore, the learning process behind the betweenness-building initiatives for actor #51 arose from two kinds of motivations. One was its purpose in nurturing indigenously-grown civil society actors to build up the general resilient strength from the bottom-up. This further led to its actions in guiding and assisting the institutionalization process of emerging grassroots group actors.

During the emergency response stage, actor #123 and #4 also emerged to have higher betweenness measures. And not only were their actions being persistent during the recovery stage, they were joined by another newly established local civil society actor #97, which held a close tie with actor #4. The following accounts illustrate their outlook in building up the Chinese civil society.

The Case of Actor #123(SG123)

For the experiences of actor #123, I specifically focused on the personal reflections of how the organizer saw himself as part of the transformation since the establishment of his group after the earthquake.

At one time, the organizer (SG123-01) called himself a “行者”, the closest meaning in the English language would be a “walker” or a “traveler”. But the term in Chinese means much more than what we usually think about those travelers for leisure alone or walking without a purpose. It maintains an emotional content in how he saw his life both before and after the disaster event.

> I have been in Sichuan for almost three years now and developed an emotional attachment to *** (an area significantly impacted by the earthquake)...participated in the emergency response the second day after the earthquake there, witnessed some of the most extreme traumatic scenes, and these had been one of the primary motivations in persisting my work in the same area over the years…very emotionally attached…whether our team can grow and develop in the future, a lot of it has to do with the government, particularly its attitudes toward us NGOs. (SG123-01-05[216])

According to him, after May 12, 2011, the majority of the domestic foundations will no longer providing financial support for projects related to the earthquake recovery anymore. And this would mean that those nonprofit groups and organizations that initially started out by performing tasks related to disaster recovery will have to seek out other ways of functioning for sustainability. Although the current funding for the group can sustain the group tasks for another year, there were still many indeterminate factors that could affect the fate of the group after its funding is used up. At the moment, the

[216] For Chinese script, please see Appendix 8.5.

tasks were loaded until the end of the year (year of 2011) and the organizer somehow expressed a type of "let-go" spirit when trying to think about the future of the group. It first gave me the impression that he probably had too much at hand and there were no time left to worry for what would happen the next year. But as he went on elaborating on his thoughts in this regard, it turned out that he had a plan that would be even more devotional than I could have ever imagined.

> Who knows, next year, I might move away from Sichuan and to an even poorer area of the country, this Province wasn't suffering from extreme poverty, those areas that suffer the most are not on the Chengdu basin but are located in the mountain areas to the west and the east…My old online name was actually '行者无疆', while I'm still able, I would rather go to these different places until the day when I no longer have energy 'running around' anymore".
>
> "Maybe one day I will not be working in Sichuan anymore, maybe end up in a place that suffers more poverty. The Sichuan province was originally not that poor and the most poverty-stricken areas are not in the Chengdu basin but in the northwest part of the mountain areas. I want to go to the even more impoverished areas in the future to do more things for people there. The previous online name I used was called 'traveler without boundary'. As long as I am still physically able to do what I wanted to do, possibly in the next few years, I will keep going until one day I am out of energy. (SG123-01-06[217])

What was striking was the organizer's long term devotion in keeping a spirit of serving those in extreme conditions. The traumatic experiences he had gone through since the earthquake and the various kinds of obstacles that he had to overcome to implement the

[217] For Chinese script, please see Appendix 8.6.

tasks being performed at hand had not slightly intimidated him from backing off from what aspired him to serve those most in need. As was being recalled,

> there were times when I was completely devastated by the problems that I had to face in order to move on, but it was this compassion for the ordinary Chinese people that eventually supported me through the difficult situations one by one…and being able to overcome them also turned out to be asset for me to go through a learning and training process. (SG123-01-07[218]).

Arising out of all these difficult circumstances, was not a weaker body whose courage was being "torn apart" and no longer able to stand up. Rather, what emerged was a strengthened heart ready to take more challenges, not for the comfort of one's own life but for the betterment of the lives of others. And I would refer this kind of transformation as the conceptual foundation from which we start to define "resilience". At the source of its emergence, it was not just a simple outcome measure that was to be and could be calculated. And it was also more than a coping mechanism that emphasizes on the passiveness of the agents upon confronted by the situation. What it was, in this case, was a learning process through which the old pattern of action was completely transformed in such a way that a new pattern of understanding and action being emerged and sustained.

> I agree, even as a volunteer, I have encountered some really extreme difficulties when in the field. But it was my passion and care for the people there that eventually supported and motivated me to be persistent. There had been so many

[218] For Chinese script, please see Appendix 8.6.01.

> hurdles that I had to overcome, but at the same time, it was a good training experience. (SG123-01-07[219])

The Case of Actor #97 (SG97)

Upon reflecting the experiences as a learning process, the organizer (NGO97-01) provided the following account as part of a forward-looking perspective in risk-coping:

> I think the most important factor is us. What this means is to make systematic improvement on our own capability and on generating results. I am at more peace when thinking about the funding issue. It would be great if we could apply for some, and sustain ourselves as long as we can. I am not the kind of person who would be controlled by the thoughts of making this into something grand. I don't have those kinds of ambitions. Our team members would think of it the same way. We are doing it not because we wanted to make our work into something well-known across the entire Sichuan Province or with a mindset thinking that we must obtain the kind of funding from the government. These kinds of things do not depend on our own efforts alone. There are so many other factors can come into play and are out of our control. It's no use to force anything to happen, but we will surely try our best. For people like us professionals, we can still make it if we don't join the NGO field. Neither do I need to use the fact that I'm working for NGOs to gratify the needs in my heart or to prove my own value. Of course this is one way, but not the only way. (SG97-01-14[220])

First of all, the key factor for sustained action in the future derives from a lens through which one can look from "within" to examine the organizational actor's own capability

[219] For Chinese script, please see Appendix 8.7.

[220] For Chinese script, please see Appendix 8.8.

development and the ways of "systemizing" its activity outcomes achieved over time. In other words, it represented an awareness of the actor's need for capability-enhancement in order to improve its own functioning strength that can only be realized through its own field actions over the longer term. Secondly, those other factors such as obtaining consistent funding opportunities and raising the organization's recognition among others in the field, although better to have, but are not the primary reasons for the organizer to start up an NGO in the first place. The formation of this civil society actor itself was not used as a means representing achievements being made to enhance "power" and "fame" through the eyes of others. But rather, the existence of the entity represented a reflection of participant's inherent desire to exercise her own agency action to make contributions to the society not only during the period immediately following a crisis but most importantly throughout the periods of long term social development.

Risk factors at the Community Level

A concept constantly being discussed by the organizer throughout her account was the term "community". It is worth looking further into the specific meaning being referred to by the organizer in order to understand how "risk" is being interpreted in this

case and being applied as the primary motivations of the actor maintaining its long term functioning.

As interpreted by the organizer of actor #97, "community" was a concept incorporating those living in the areas on the borderline between urban and rural boundaries. The reason that her group chose to provide support for this type of communities was one that could be traced back to the "urban-rural integration" development process being implemented by the government throughout a selected number of cities in China.

Regardless of the policy's intended outcome in "integrating and merging" rural and urban areas for an improved quality of lives of those living across the boundaries, from the perspective of the organizer, differences still maintain, and were particularly recognizable within "communities" residing around the borderline areas across urban and rural boundaries. The uniqueness of these communities was understood as the following[221]:

> There is an interesting aspect about the people living there. They might symbolically belong to urban residents when their registration status changed from rural to urban, but there are still many internal things showed that they are not. Many people would still treat them as urban residents and in fact, many of the

[221] For detail account, refer to Appendix 8.CaseSG97.6.

> internal and external factors are not in place yet. That's why we chose to focus on this group of people. From the outset, you can see them living in high-rise residential buildings, all is well on the outside. But as you understand more about them, many of the things are not in place. Only the "hardware" was being built, but many of the supporting factors were still lacking, be it the supporting services or the concepts regarding the ways of living. (SG97-01-15[222])

This observation reflected a process through which how health-related "risks" were being understood through a lens in looking at the motivations behind the formation of civil society activities. The focus of attention for this particular actor was essentially in the healthy livelihood of that group of population who were given the registration status same as those from the urban residents but experienced various kinds of difficulties when adjusting to the "expected" urban ways of living. Particularly after the 2008 earthquake, more high-rise apartment buildings constructed with an implementation of the concept of modern communities were built to accommodate the need for housing from the disaster-hit rural populations (see figures 8.10.1 to 8.10.4).

[222] For Chinese script, please see Appendix 8.9.

Figure 8.10.1. Newly Constructed Urban Communities Post-earthquake in Dujiangyan-1

(*Source:* photo taken by Jia Lu, 2011)

Figure 8.10.2. Newly Constructed Urban Communities Post-earthquake in Dujiangyan-2

(*Source*: photo taken by Jia Lu, 2011)

Figure 8.10.3. Newly Constructed Urban Communities Post-earthquake in Dujiangyan-3

(*Source*: photo taken by Jia Lu, 2011)

Figure 8.10.4. Newly Constructed Community Hospital Serving the Residents Living in Reconstructed Housing in the Surrounding Areas

(*Source*: photo taken by Jia Lu, 2011)

The social and mental adjustment process for rural population to make changes to their way of life when living in modern facilities and participating in community-oriented lives were what the organizer saw as critical in providing them the needed support system for such social transition.

Two traits can be re-emphasized regarding the nature of formation of the actor #97 here. One was its focus on the social and human aspect of development during the

long term recovery stage. Its selection of site practice and population for which it provided services towards were all guided by such an interest and devotion. The other one was the nature of "risk" being interpreted from the perspective of a civil society actor involved not just the predictable as well as the "regular" types of natural or man-made disasters, it could also be reflected and understood through a mechanism of how people make changes to their lives in accordance with a particular social context. The negative consequences when one group of people failed to make such adjustment to develop a "new" way of life in the changed social settings, could be health-related, just as one that was observed by the organizer of actor #97:

> That's why the communities that we have collaborative relationships with all have this kind of characteristic. If they would further approve us, they would also provide us with some financial supports within their capability. Although they can't offer much, but they would try their best to make copies for our publication brochures or things like that, so as to let more people know about our work related to health awareness. So the key is to help the residents received more health-related information. When we are organizing our activities, they would provide us with any support that is within their boundaries of capabilities. (SG97-01-16[223])

As we can see, the learning process from which the actor developed its capability in coping with uncertainties and risks originated from an awareness of actively seeking an improvement in its performance effectiveness. Like other civil society actors thus

[223] For Chinese script, please see Appendix 8.10.

being investigated so far, the source of sustenance in its pursuit to transform itself over time came from the organizer' desire to engage long term in the area of community health for the betterment of local people's lives, thus making a contribution to the social and human development for China.

The Case of Actor #4 (SG4)

After reflecting on the journey that the group had made since the disaster event, the participant showed a great sense of passion and enthusiastic energy when he was asked about the relevant future plans. He would put much attention on learning more regarding the meaning of concepts such as "civil society", "freedom", as well as the relationships among the three domains of civil society, the state and the market in social development. What he reflected as important was significantly forward-looking:

> What we need is to first think clearly about the problems we face related to social development, then, we hope to influence our team members through their hearts and way of thinking and. This way, even if it won't have an instant effect on the current development of civil society, but at least they can be stored as ideological 'currency' that can be drawn to use in the future. (SG4-01-02[224])

[224] For Chinese script, please see Appendix 8.11.

As I put in my fieldwork interview notes, "(there is) the need to first for himself to think clearly and thoroughly about the social problems and development issues that we currently face, then, making a gradual influence to the mind and heart of his group members. This way, what is done now can be stored as some kind of reserve in terms of out ways of thinking to prepare for use in the future, even though such efforts might not have an immediate impact on the development of civil society at the current stage".

The Case of Actor #49 (NGO49)

When it came to relating the NGO's experiences as a long term oriented learning process towards its coping with future changes, the uniqueness of Chinese civil society and its development trajectory was being emphasized by the account of the organizer of #49.

> LU: Does your team have any future plans, goals, or aims?
>
> NGO49-01: It would be hard to explain in such a short while…the current development of (the Chinese) civil society is still immature, belongs to a primary stage of development. This is why we want to explore and discover a working model that fits our context and useful for guiding its survival. And we hope this model can be reproduced for us to use. That's why what we are doing is taking actions, and conducting research at the same time, like action research. The only thing is that this might be a very long process. This is because no one would have known unless we have traveled on this road and know what it is like. This path for

> our Chinese people is to be explored by us Chinese. It is not suitable to directly copy and reproduce the Western models. The Chinese society, its political system, our current conditions are all different from them. This will be a painful process. Many of the existing trainings for NGO governance are transported from the West, and they completely won't fit our functioning in the Chinese context. You see, every year since the first lump-sum of financial assistance came from the United Nations in 1986, NGOs in China have developed until now, with hundreds and thousands of grassroots participating in these capacity-building programs. But the results were often not satisfactory, and this is because the teaching materials with their main background were all imported and copied from the West, they often won't fit our situation. That's why we want to develop one of our own models. But even such a simple idea would probably need several decades to mature. (NGO49-01-11[225])

Several implications regarding the characteristics of civil society emergence can be summarized from this case. First of all, actions inside the civil society domain were by then in their primitive stage for sustainable capability functioning of group/organizational actors. The organizer of actor #49 revealed a state of "confusion" when real-world practices in the Chinese context followed the currently "prescribed" NGO governing structures that were basically "imported" from the Western models. The misfit of the structural contexts within which practices arose was perceived to be the main factor that had brought some of the major difficulties in the development of "NGOs" in China. Secondly, there was a motivational desire for the actor to continue its own initiatives in field practices to make its contribution to building up a governing model that would "fit"

[225] For Chinese script, please see Appendix 8.12.

appropriately for the growth of Chinese civil society. Note that the terms such as “action”, “capability development” and “model-building” were being regularly used to indicate the actor’s willingness to maintain its role as a proactive actor being involved long term in the development of civil society. In other words, the current experiences of this actor have activated a sense of forward-looking-ness in terms of how it perceive its own role in the domain of civil society over the longer term. Most importantly, these unique experiences of growth since the event of the earthquake stirred up the actor’s awareness of its cultural and social environment and indeed motivated this NGO’s actions as taking part in a social change process searching for a “model” that promotes Chinese civil society’s development (also see Figures 8.10.5 to 8.10.7).

Figure 8.10.5. A Community Center Established by Actor #49 Providing Food and Refreshments to Community Residents Nearby

(*Source*: photo taken by Jia Lu, 2011)

Figure 8.10.6. Community Center Established by Actor #49 Providing Residents a Place to Gather and Relax with Services such as Food, Entertainment, and Newspapers

(*Source:* photo taken by Jia Lu, 2011)

Figure 8.10.7. Books provided by Actor #49 as Part of the Community Center Service

(*Source*: photo taken by Jia Lu, 2011)

The Case of Actor NGOLF

Since it was a brand new form of status existence on the part of the civil society actor and at the same time, a new management un-chattered territory on the part of Chinese public administration system, both NGOLF and the state at the local government level were involved in a learning process in defining each other's roles when the former

became both administratively (non-government-sponsorship) separated from the state and functionally (nonprofit) detached from the market.

> Because we don't have a sponsor work unit[226], so we basically can do whatever we want, as long as we don't violate the law. And of course we have our own rules and regulations, they are our constitution. For example, our constitution is to focus on volunteer training, and social communication. And of course they (the government) described these two factors in a very broad way. 'Social communication' is such a broad concept…and what are the forms of communication? This reveals the fact that even the government itself lacks sufficient understanding of these things. There was once a news reporter asked me, 'so what were the things that bothered you the most?' In fact, the bothersome thing was that they suddenly told us that we can do whatever we wanted, and instead, we don't know what we should do or should not do anymore. Before, it was about what we need to do and see what their reactions were. And now the situation is, we are given an empty basket without knowing what can be put in here, and what cannot be in here… (NGOLF-01-08[227])

Note that on the action side in terms the rights that came along with this newly established institutional form, the role definition outlined and intended to provide guidelines for the actions of this kind of NGOs was perceived to be vague enough for the participant to raise certain doubts on the boundaries of its activities that can be performed. On the government side of the picture, it was indeed the case that the actor did receive the "administrative approval" (行政审批) to obtain its legal identity. However, when it came

[226] Please see original Chinese script for reasons. NGOLF-01-05 in Appendix 8.13

[227] For Chinese script, please see Appendix 8.13.

to the daily "administration" (行政管理) process itself, neither the NGO itself nor the local government were clear in each of its "obligations and responsibilities".

> But even they themselves (the government) did not have an idea of how to manage us, and we don't know what their responsibilities are neither. The only thing we are certain of is that we cannot violate the law. And now we are registered, for a registered organization like us, we are still not so clear about what kind of things that would fall into our responsibilities. Up until now, they have not informed us clearly about all these. For example, do we need to provide monthly reports to them?... similar things like that. And they did not demand us to do these things. We are not so clear about what's going on neither. We have also consulted with some field experts about this, and no one really had responded, no one seemed to be clear about it. (NGOLF-01-09[228])

This example illustrated the unique dynamics between what constituted as structural enablers and what constituted as structural obstacles under the conditions of such institutional climate emerged out a crisis event. On the one hand, the civil society actor did officially gain its registration recognition without having to submit itself to the sponsorship oversight from the government branches. This meant that it did not have the responsibility to provide reports for its sponsor. Having only a registration unit on paper as a certificate, the only "requirements" that the actor was instructed to give at the time were: "there is a need to inform and report to us if you will be holding large-scale activities…if holding small-scale training programs, (不要太高调阿)", as was recalled

[228] For Chinese script, please see Appendix 8.14.

by the participant. On the other hand, the practicing difficulties on the part of the civil society actors arose exactly out of this kind of administrative detachment, which was characterized by a state of confusion created by a lack of clear depiction of roles and responsibilities acting as guidelines. What was hoped for in this regard, on the part of NGOLF, was that there could be a set of rules the NGO could consistently refer to when operating in the field, or a "guideline for creating seasonal or yearly reports". The reason for this was given in the participant's following account:

> We are indeed legit, but since we are not required to prepare reports, we do feel like we are functioning in a 'gray area'. We'd rather they (the government) require us to prepare a document reporting on the things we have done this month, what we will be doing next month, our financial situations. It would be so much better to be demanded such a report. If not, we would in fact feel not settled somehow. This is because if one day the government pointed out on something on us, there would be no way for us to explain clearly anymore. They don't have this kinds of detailed rules and regulations. (NGOLF-01-10[229])

This type of needs for administrative attachment on the part of the civil society actor upon registering as a formal NGO without sponsors was qualitatively different from the type of attachment that came with a registration status with government sponsors. In this sense, the participant was clear in stating the details of such attachments for the latter type. First of all, when obtaining a legal status and receiving the title as a "NPO", most of

[229] For Chinese script, please see Appendix 8.15.

these entities remain to have close ties with the government, including those NPOs created by those operating for government purposes. Departments and bureaus could also establish their own associations, foundations and centers, which were also categorized as "civil organizations". However, the operating system of many of these NPOs was occupied by those affiliated with officials inside the government.

> In circumstances when they cannot do things with an administrative identity, they will use their associational identity as an alternative. If problems arose, they can say that it was not the fault of the administration, but the conduct of civic organizations, thus making them 'clear' of any problems. In China, the majority of the 'NGOs' are in fact functioning like this. Organizations like us without a sponsoring work unit, means that we no longer is the same type like them. Strictly speaking, we should not be given the same type of registration certificate with those others, but we still did. There is a qualitative difference between us and them though. (NGOLF-01-11[230])

Therefore, the institutional significance of the actor NGOLF obtaining its unique registration status resided in its operational independence and the range of functioning activities that this type of NGOs could perform are no longer being constrained by the needs and wants of the government branches that were part of the state control. From the lens of considering the emergence of civil society, this marked a primary condition of institutional transformation through which the agency actions of civil society actors earned their independence apart from the influence of the state. And this is a critical pre-

[230] For Chinese script, please see Appendix 8.16.

condition from which capacity development of this type of NGOs thus formed can be realized over time. From the case of actor NGOLF, such a condition did not arise out of reaching towards a complete detached state where the civil society domain and the state domain were ignorant or posing against each other's works. Rather, it can be called a type of "balanced independence" where:

> What we need to do is not what they required, so we can't say that we are in direct coordination with their work, but in fact, we are still complementing their works. And these tasks are not the ones that the government strictly required us to do, they have been done more because we wanted to do it spontaneously in a self-organized fashion. We would then go ahead and do them. (NGOLF-01-12[231])

Another aspect of this "pre-condition for NGO capacity building" in the Chinese case is the need for designing supportive social policies in guiding and enhancing the capabilities of civil society actors in managing themselves and at the same time being responsible for their assigned duties. One example for such a lack thereof was revealed through the type of certification the actor received at the same time that it was given an NGO status without a sponsor. This is best illustrated from the account of the participant,

> The registration certificate that we received is the same type with those other NGOs that I mentioned earlier. The sponsor unit is still being listed in the certificate. This is because they don't have a new one to give to us. Plus, I think the government will probably not have much problem with this kind of

[231] For Chinese script, please see Appendix 8.17.

registration form…the only thing is that it needs further detailed management…it doesn't have a set of supporting rules and regulations. (NGOLF-01-13[232])

Also noted from the actor's registration experience, the policies being implemented at the time were mainly created towards those "NPOs" operating as part of the government. The difference for this particular civil society actor is that not only it did not have an identity affiliated to the state, it designed its own regulatory and implantation measures to carry out actions toward its goals[233].

From the long term point of view, the participant of NGOLF provided an outlook that essentially moved its action originally centered on the crisis environment towards making contributions to the general social development in the country. This orientation of growth was also relational in its inherent nature. For instance, like actor #3, #49, and #51, one of foremost goals for the actor was to facilitate the connections among more groups and organizations operating not only in the civil society domain, but also inside the state and the market domain. Defining its function as a "platform" for exchange of ideas and information, the primary identity of the actor was hoped to be revealed by actions in "passing on the valuable experiences for further awareness and acceptance of society at large, especially from schools and local communities, and thus informing people from all

[232] For Chinese script, please see Appendix 8.18.

[233] For detailed account, refer to Appendix 8.CaseNGOLF.6(1).

walks of life of the things that everyone should hold on to even in our normal daily lives, not just during the time of a crisis" (Lu 2011).

When touched upon the topic of relating the actor's previous experiences to its role in social development, it was beyond the disaster event itself and into the construction of a type of "social resilience" characterized by connecting all kinds of actors inside the society together that brought its actions back to the original motivation:

> Not all works are done for the sole purpose of getting financial gains, neither do all the works are done for earning profits as the priority goal. (We) just wanted to pass on a set of ideas that there is an indispensable demand for social service and social work. Through our activities, we wanted both the students and their parents to understand and recognize why social services and the field of philanthropy play roles that are indispensable to modern society. We wanted the government to know, private enterprises, and other civil society organizations to know and understand…this is what we have envisioned. What we can do on our own is limited. But the reason that we kept trying to get registered is to break into a new ground in the field. What comes after will be much easier. I think the second and the third similar organizations will be registered (like us) soon. It's because of our precedent case…it's not that there has never been something similar happening before, but those registered ones did not register as formal NGOs. Neither does it mean that those who did not register were less competent. They only thing it revealed is that those registered ones took other paths to find their legal status, and most used the route to register as private enterprises. It is very common. When we first applied as NGOLF, a few of our launching groups were registered as companies. In fact, their purposes were not for earning profit, and they are all over the place in Chengdu. Like ***, they did the business registration route as

well. The real motive behind it was in fact just to have a legal status, and they have to pay taxes too. (NGOLF-01-14[234])

The educational purpose that the participant perceived its group actor to perform was in a way of bringing about a type of connection inside the society to raise awareness of the important role of civil society actors. Such relationship-building was also perceived to promote future collaborative actions in the particular area of social work and services. "Resilience", as learned by this organizational actor, was "others-oriented", not "self-directed". Thus, two natures of resilience in the context of this research can be depicted. One is the relational embeddedness nature that the civil society actors often found themselves use to define their own identity. The other is the "service" nature that guided actors to make decisions in choosing their field of activities and in defining their roles. These traits also provide keys to understanding the dramatic change and sustained structural transformation in network connectedness and expansion towards a tendency for out-degree nominations when comparing before and after the disaster event[235].

[234] For Chinese script, please see Appendix 8.19.

[235] For detail, refer to Appendix 8.CaseNGOLF.6(2).

Interpretive Summary

The learning process of civil society actors after the disaster event developed into having a general recognition of their long term role in enhancing the capacity for the society to cope and adapt upon facing an extreme disastrous event. This is manifested not only at the perception level but also in actions. From the perspective of civil society actors, the specific ways that this could be done would incorporate first raising the awareness among the mass in terms of the role performed by civil society actors. Then, the forces of perseverance and commitment entered into the picture working to promote the institutional development of these actors. Lastly, the conditions for the transformation of Chinese civil society from a "prostrating" state to a "standing-up" way of existence was signified by the persistent motivation in actors collaboratively pursuing a Chinese "home-grown" social development model with proactive initiatives moving beyond disaster recovery.

Summarizing the previous qualitative and quantitative conceptualization arguments, I use the following table 8.10 to provide a preliminary theoretical framework for understanding the structural changes of Chinese civil society after the 2008

Wenchuan earthquake. The different characteristics of the communication and collaboration networks under investigation were exemplified over time.

Table 8.10. Conceptual Framework of Institutional Change in Civil Society Domain

	Out degree Centralization (Emerging structuration)	In-degree Centralization (Empowerment)	Betweenness Centralization (Strengthening)
t1	Reluctant estrangement	Ignorant	Self-sufficiency
t2	Action-agency freedom realized	Recognition-trust building	Intermediary role adoption
t3	Commitment actualization	Commitment actualization	Strength for resilience

The three time stages before and after the earthquake event triggered various types of institutional structural characteristics inside the civil society domain when examining the centralization measures from both a local and global perspective. Switching the focus from actors' local environments to the whole network perspective across time, one of the most distinguishing structural changes can be conceptualized as one that the actors inside the civil society domain moved from an attitude of "estranged reluctance" to one that exuberated devotion with an increasing level of "strength of resilience". I have mentioned that such changes could be transformative in terms of the actions taken to engage in the long term social re-ordering after the disaster event. Such a change process can be further demonstrated by the actors' desire to make their own contributions to the overall development of Chinese civil society beyond disaster recovery. In order to further look at

the various “facets” of such strength and the actor composition of its sub-structures, I will move on discussing how actors group themselves within the communication and collaboration networks in executing the synergy of resilience over time.

Role Formation of Chinese Civil Society

Thus far, I have examined five major perspectives to understand the structural change dynamics inside the civil society domain both before and after a catastrophic crisis. I started off by looking at some of the foundational network concepts in terms of conducting a structural analysis on the communication and collaboration networks at hand. These include “density”, “geodesic distance”, “eccentricity”, “diameter”, and “flow”. After clarifying these important concepts, I took the second step to compare how actions inside the civil society domain situated the actors themselves within their own network neighborhoods. These aspects were being investigated through the identification of reciprocity, transitivity, clustering measures. From these perspectives in examining the nature of institutional structuration process, I then expanded the horizon to examine both the local and global neighborhoods of actors in order to demonstrate the process of social structure integration through positions of centrality and centralization. Fourthly, the

strengthening of the capability formation in terms of communication and collaboration behavior was examined in light of the co-evolution dynamics between the two types of network environments. Fifth, the "fruits" of agency action and the sustenance of the inter-dependency nature of civil society actors were presented in the form of interactions among the civil society, the state, and the market domains. The conditions for institution-building within the civil society domain were further traced qualitatively through the lived experiences from participants of the key actors identified in the network analysis.

In general, the previous discussions were mainly concerned about behavioral changes that led to structural cohesiveness and embeddedness intensity from both macro and micro-grouping point of view. However, nothing has been investigated towards the role identity of actors' themselves. In this section, I will shift the attention to identify the possible role status derived from a relational perspective when actors communicated and collaborated with each other over time. Theoretically, doing so will make a contribution in identifying some primary categorizations characterizing the emerging roles of civil society actors during the time of catastrophic change. This is expected to build up the foundation for future comparative studies in this area of research. Practically, the naming of roles and positions clarified the differing functions of civil society actors in times of crisis. This clarification will be valuable for policy-makers to design appropriate and

effective social interventions in terms of engaging actors in the civil society as well as promoting inter-sector collaborations.

The Structural Equivalence of Actors

One way to understand and distinguish actor positions and roles in a relational context is to define social roles from a "structural equivalent" point of view. In order to say that a set of actors are "structurally equivalent", each of the actor has to have exactly the same pattern of connections with all other actors. In other words, when it comes to factors such as to which a particular tie is connected towards or received, the intensity and the directions of ties all must be substitutable from one to the other. Therefore, the identical "positions" defined as "structural equivalent" put an emphasis on the similarity of the actors' relational patterns to others. In this study, I adopt the CONCOR approach (implemented in UCINET) to identify actors who were "structurally equivalent" with one another. To be more precise, the CONCOR method is a particular kind of algorithm that stands for "CONvergence of iterated CORrelations". The most important step being executed in this procedure is to look at the similarity of connections taking into consideration of both the number of ties and the directions from one actor to another.

This is done by first examining the values in the Pearson correlation coefficient matrix showing each pair of actors' level of similarity in terms of their patterns of affiliation. The result of this procedure is an actor-by-actor correlation matrix depicting the similarity level (correlations) for all pairs of actors across the network. The second step involves correlating each actor's connection similarity level towards all other actors in the network with every other actor. When this process of "correlating the correlations" is repeated over and over again, the result will show a clustering of groups, each of which consists of actors that are structurally equivalent with each other. Within each cluster, a pattern of "+1" and "-1" are found. A "+1" represents the pair of actors has exactly the same pattern of affiliation and a "-1" represents completely different patterns. Therefore, a strict "equivalence" status implied by the CONCOR method is one that two actors have exactly the same connections to exactly the same other actors. For an information exchange network, this can be interpreted as two actors sending out information towards and receiving from the same pattern of others. In a way, neither of the two focal actors will be at an advantageous or disadvantageous position with each other when comparing their ways of connection. Thus, "structurally" speaking, it is important to point out that the actors found in each of the clustering groups are exactly substitutable with one another. In other words, the "positions" they hold are relationally identical in terms of

how they reach out to others as well as how others reach out towards them. According to the argument of network analysts, "structurally equivalent" agents are "interchangeable one with another" and will have "similar experiences or opportunities" (Lorrain and White 1971 in Scott 2000). However, when taking into consideration of the particular research context within which such equivalency arises, cautions needs to be made when asserting the interchangeability among actors and further adjustments in interpreting such positions might also be needed. As the CONCOR output results are being discussed later, I will incorporate some possible alternative interpretations of positions based on the different types of networks being investigated.

Before I delve into the concrete measures from the CONCOR analysis, it is important to point out one of the key differences in interpreting "powerful" positions when examining actors based on their attribute and on their structural connections. In contrast to the attribute based role identification methods, such as those distinctions made through actors' title, financial status, and other types of resource possessions that often arouses a sense of self-recognition from the actors' side, the "positions" defined through structural analysis provides an alternative way of seeing and defining the "significance" of actors. Sometimes, even if one actor "enjoys" a higher status or prestige in terms of materialistic possessions or holding important titles, when it is found that the way it is

connecting to others is not substitutable with a set of other actors who are in a structurally equivalent position, the "status" and "importance" of the focal actor can be challenged. In other words, the concept of "power" again can be re-directed from an absolute attribute-based perspective to a relative relational-based point of view, as one will be illustrated in structural equivalence analysis. Another related point is that when understanding relational functioning roles from a structural perspective, actors themselves might not be aware of their positions initially. Revealing the position aspect of their actions might provide them with an eye-opening way to identify the process through which new roles can emerge. From the actors' point of view, this method will provide clarifications of "where they stand" in the functioning structure and promote further activity engagement.

Communication Role Structure

Pre-earthquake

From the following "Density Matrix" result table 8.11, we can see that the CONCOR procedure produced five clusters of actors.

Table 8.11. Pre-earthquake Communication Network Density Matrix (CONCOR Analysis)

	1	2	3	4	5
1	0.004	0.008	0.003	0.000	0.000
2	0.021	0.039	0.016	0.021	0.000
3	0.020	0.016	0.082	0.019	0.000
4	0.188	0.118	0.163	0.100	0.000
5	0.000	0.000	0.000	0.000	0.000

Note: R-squared = 0.084

Within each block, the actors are approximately structurally equivalent to each other. Across blocks, the measures that appear off-diagonally show the density of connections directed from row groups towards column groups. For example, the highest density level among pairs of blocks appeared between group #4 and group #1. Actors in group 4 tend to initiate higher density of connections towards actors inside the group #1. The "zero-blocks" represent that there was no connection between the two sets of actors, and can be perceived as a "hole" in the network. If a cell has a density level of 1, this would mean that there is a complete connection between the actors within the two sets of roles. In the communication network during the time before the earthquake, however, the densities across different sets fell significantly below the 1-blocks and zero-blocks perfect model. However, this has been found not to be the case for most of the real-world network data (Scott 2000). One way to simplify the clusters in the table towards the approximation of a 1-block and zero-block model is to convert the density measures into

two categories of “high” and “low”. The ones that are above a pre-determined threshold will be given the value of 1 and those below the threshold point will be given a value of 0. In this study, I adopt the cut-off point to be the overall density of the network at this period of time, which is 0.0122. Thus, any density measures inside the table that fall under the 0.0122 level will be represented by 0 and those higher than this value will be represented by a 1. What this means is that if the density of connections among actors between a pair of blocks not as high as the overall communication network density during the period before the disaster, we approximate their connections to be “low” and thus approximate their tie to be 0.

Performing this procedure on the current communication network data at time stage before the earthquake, I created the “block image” table (see table 8.12).

Table 8.12. Pre-earthquake Communication Network Block Image of CONCOR Analysis

Positions	1	2	3	4	5
1	0	0	0	0	0
2	1	1	1	1	0
3	1	1	1	1	0
4	1	1	1	1	0
5	0	0	0	0	0

Note: Density=0.0122

Now we can see that there is a complete disconnection between all the other groups with group #5. Not only actors in this group sent no ties to actors in all other sets of role

clusters, but also no one in these other blocks reached out to members of this group. A closer examination of the partition diagram shows that actors in group #5 are separated from the rest of the blocks by being composed mainly of isolated actors not participating in the network-building activities. Actors in this block could also be those civil society actors that were not in existence at this stage of time. Another characteristic at this level of division was the signs of inactivity of those inside the block #1. From the block image, we can see that while actors in equivalence class 2, 3, and 4 were active in building communication connections with those in class 1, the latter did not send ties to any other blocks. What can be said regarding the actors inside equivalence class 1 is that the actors inside of it showed a sense of passiveness in information exchange during the period before the earthquake. Despite of its lack of initiation efforts, actors from other equivalence classes (2, 3, and 4) still tended to reach out for its members.

In order to explicitly depict the patterns of positioning among the four structurally equivalent role classes and thus identifying possible emerging roles and positions, a "block diagram" is further created from the "block image". The diagram provides a visual aid in illustrating the dynamics in communication among the identified blocks. Observing the diagram shown in figure 8.11 below, we can tell that the structural position

distribution of the pre-earthquake network exemplifies signs of both hierarchy and exchange at the same time.

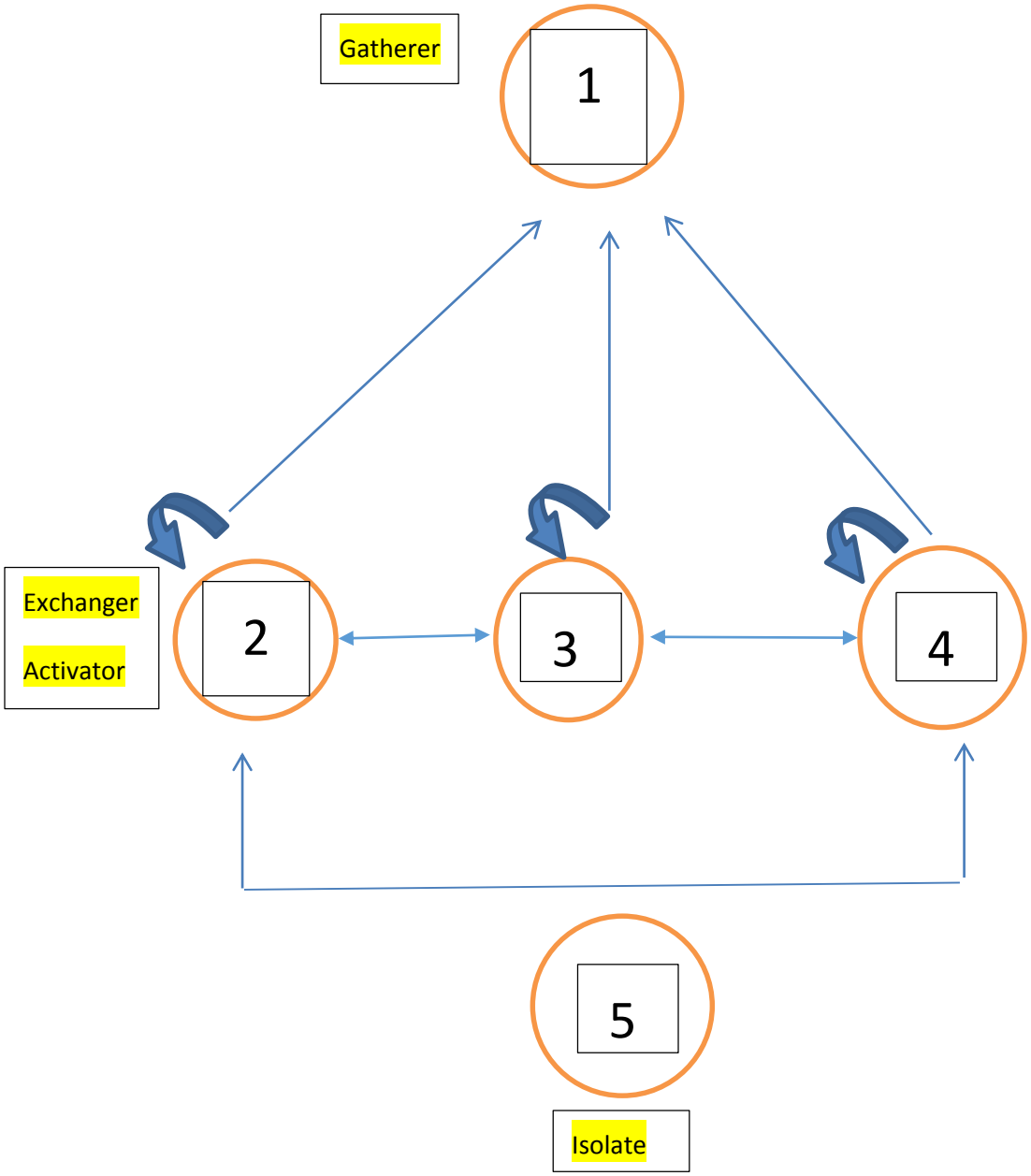


Figure 8.11. Pre-Earthquake Communication Role Structure (Block Diagram of CONCOR)

First of all, the source of hierarchy came from the communication dynamics between block 1 and the group composed of block 2, 3, and 4. As the arrow signs shown, actors inside the three equivalence classes at the bottom were more likely to reach out to the members in cluster 1. Secondly, the communication connections among clusters 2, 3, and 4 were all mutually reciprocated. This means that information was intensely being exchanged among these three blocks. Thirdly, within each of the role cluster 2, 3, and 4, members were also highly active in reaching out among themselves. Therefore, on the one hand, for these three clusters, information tended to be transferred both within and across blocks. On the other hand, what was communicated among blocks 2, 3, and 4 was also being directed towards block 1. In this sense, the position being held by members inside cluster 1 would be one that assimilates "gatherers" or "collectors" of information from the rest of the blocks. This function was also being enhanced when we observe that that unlike the "self-autonomy" feature exemplified by block 2, 3, 4, members in cluster 1 were less likely to extend connections towards each other. This way, each one of them will gather information or communicate separately from another while actually facing the same information transferring "opportunity" structure from clusters 2, 3, 4. From the perspective of the members from the bottom three clusters, those inside block one were

perceived as important when ties were constantly being actively directed towards them but without reciprocation.

It is therefore necessary to briefly examine the actor composition of those members inside block 1. One factor that I will be focusing on here is to look for the participation patterns of the state and the market aggregate actors. Such is in accordance with the research goal in understanding the role of the state and the market sectors alongside with the structural changes in civil society before and after a crisis. The partition diagram shown through the CONCOR output tells us that the state actor was indeed one of the members in block 1. The market actor was a member of block 2. This kind of pattern means that the government agencies in the state aggregate were still perceived to perform an "autonomous" and "respected" role among the civil society actors. However, the state actor was not the only one that functions in an information gatherer position. There were other civil society actors that performed approximately "similar" roles with the state inside the cluster 1. This finding is in contrast to some arguments in planning theory and civil society theory that often positioned the state as functioning alone as opposed to those inside the civil society domain. Although there are theorists who postulated that there is a mutual penetration among the domains of civil society, the state and the market, the exact form and process of this dynamic integration

has not been examined and depicted explicitly. What the results from this section of the research showed is that even before the earthquake, it is possible for civil society actors and the state actors to share a "well-regarded" functioning position when looking from the perspective of other civil society actors. In other words, the "autonomy of power" within the context of information sharing and communication can be shared rather than being possessed by one stakeholder alone. Lastly, I would like to provide a preliminary conceptualization that characterizes actors' positions before the earthquake. As mentioned earlier, members inside the cluster 1 can be called information "gatherers" in that others are more than willing to initiate contacts with them. But its position cannot be realized without the active exchange and reaching-out activities among three other role classes. Members of these three clusters tended to perform a role of "agency" in order to activate the potential relationships across the network. Therefore, they can be named as "activator".

Emergency Response

Observing the density matrix output for the period shortly after the earthquake (see table 8.13), the CONCOR analysis found 8 equivalence classes.

Table 8.13. Emergency Response Communication Network Density Matrix (CONCOR Analysis)

Positions	1	2	3	4	5	6	7	8
1	0.003	0.002	0.000	0.002	0.000	0.000	0.000	0.000
2	0.026	0.005	0.000	0.000	0.009	0.000	0.000	0.058
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4	0.035	0.011	0.007	0.004	0.013	0.023	0.006	0.057
5	0.275	0.145	0.019	0.038	0.250	0.095	0.056	0.407
6	0.421	0.275	0.025	0.084	0.317	0.381	0.143	0.476
7	0.276	0.106	0.337	0.074	0.222	0.286	0.250	0.417
8	0.675	0.737	0.297	0.496	0.759	0.738	0.333	0.633

Note: R-squared = 0.362

Compared to the period before, this means that there could be an increasing differentiation of roles and positions at the emergency response stage. Further examining the density values inside the matrix, we find that there were no isolated clusters in the communication network where members of one or more blocks are separated from the connections of other block members. In other words, the relationship among the 8 blocks turned out to be a connected one. The general differences inside the CONCOR density matrix before and shortly after the earthquake provided key evidences demonstrating an existing transformation process in position formation and role differentiation at the same time when actors were building up their communication and information exchange network. Therefore, on the one hand, new structurally equivalent positions were emerging shortly after the disaster. And these changes were temporarily prompted, at least for the emergency response stage, by various forms of agency actions on the part of

civil society actors. Although these position categories of agency actions might not yet be culturally recognized and socially instilled with respect to time, examining the emergence of a diversification process performs as an important step in understanding how certain proto types of roles came into being at the very earliest stage. This section will focus solely on such initial process of communication structural transformation by comparing before and after the crisis situations. In order to examine the possibility of whether there are signs of long term socially recognized roles, I will use the output results from the recovery period to illustrate this point in the next section.

Since the overall density of the network at this period of time is 0.0544, the "block image of CONCOR results" is being constructed by comparing the density values in the table 8.14 with the overall density measure.

Table 8.14. Emergency Response Communication Network Block Image of CONCOR Analysis

Positions	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	1
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	1
5	1	1	0	0	1	1	1	1
6	1	1	0	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1

Note: Density=0.0544

As we can see, actors in role blocks from #1 to #4 were not as likely to communicate with members from other blocks. On the other hand, clusters from #5 to #8 tended to be more active in terms of reaching out to other group members. Based on the results shown in the block image, an image diagram is being constructed to further clarify the emerging position diversifications among the actors who participated in the emergency response process after the earthquake.

Figure 8.12 below shows the inter-relationships among the structurally equivalent classes graphically.

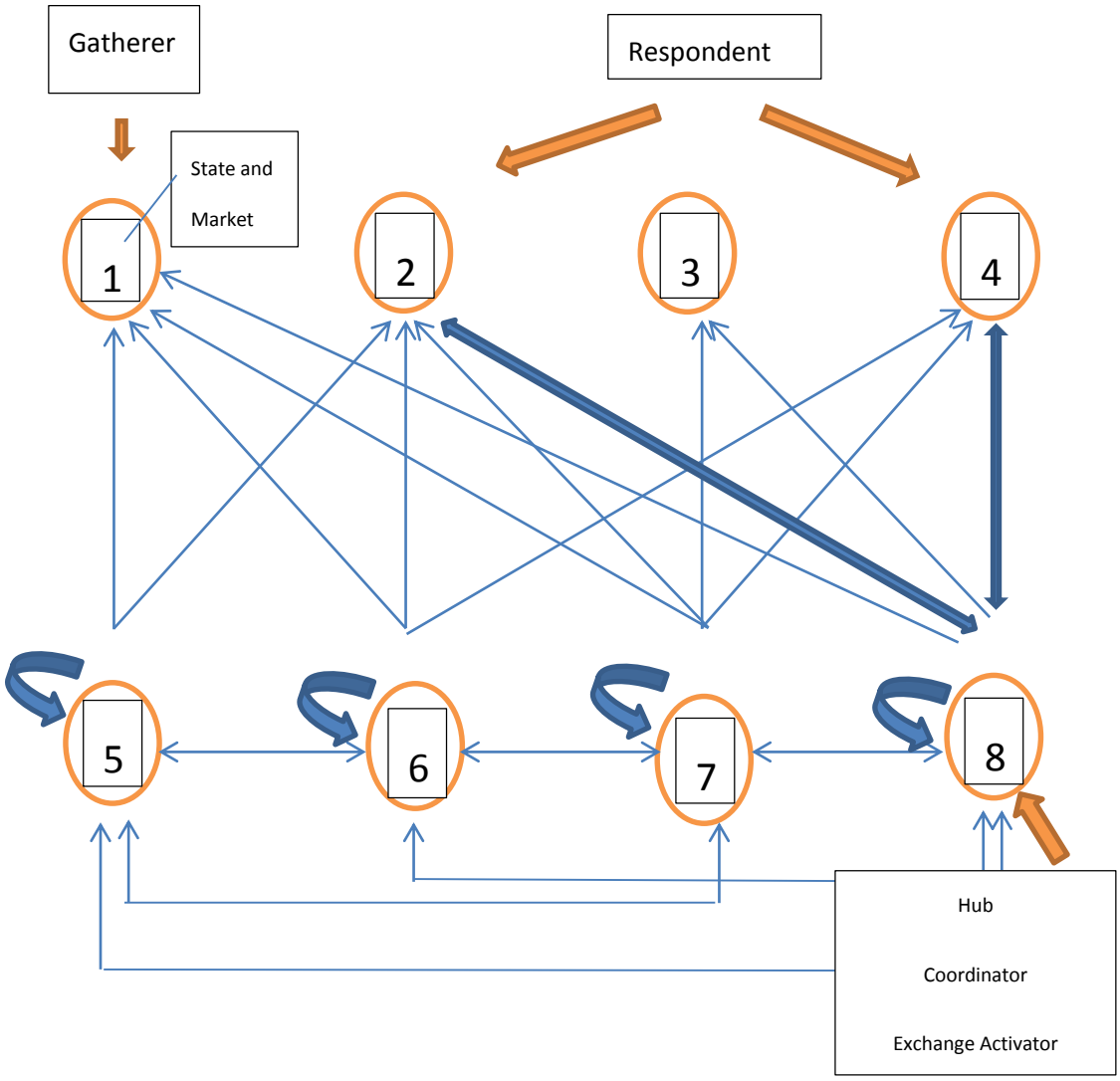


Figure 8.12. Emergency Response Communication Role Structure (Block Diagram of CONCOR)

First of all, as the directions of the arrows show, the actors in clusters 5, 6, 7, and 8 were the ones tended to direct communication ties towards those in clusters 1, 2, 3, and 4. However, the level of intensity for the former group of clusters to the latter varies. Note that actors in clusters 7 and 8 had access of communication towards all the members

in 1, 2, 3, and 4. For those in clusters 5 and 6, there happened to be “holes” in their outreach activities. For example, members of equivalence class 5 did not communicate directly with those in 3 and 4. Also, those in class 6 were more likely to send ties to all other blocks except for #3. In this network, it was also rare for members in clusters 1, 2, 3, 4 to reciprocate the initiatives from the group of four other blocks at the bottom of the graph. There were two exceptions regarding this feature. One was the reciprocated tie from role block 2 towards block 8. The other was the reciprocated tie from block 4 to block 8. These were the only two lines of communication connection that resulted in actual information exchange between the group of clusters located at the top of the graph and the group of clusters at the bottom. Also, there were no inter-connections among blocks 1, 2, 3, and 4. Members in these clusters tended to act as “autonomous” agents when it came to receiving information from members of all other blocks. By contrast, the bottom group of clusters (5, 6, 7, and 8) turned out to be highly active in terms of sending out ties among each other. Information could generally pass through these four blocks without structural difficulty. Not only so, members within each one of these blocks were also active in sharing information among each other. Therefore, there were three characteristic differences among these two groups of blocks. The first notable feature was that the bottom group of clusters played a more active role not only in reaching out each

other but also towards the other group of clusters. Secondly, comparing the level of interactions among members themselves inside each one of the role cluster, information was "well-shared" inside clusters 5, 6, 7, and 8, as the self-directed arrows show in the graph. On the contrary, members of clusters 1, 2, 3, and 4 "preferred" to remain stand-alone while each collects its own information. Thirdly, despite of the existence of information stand-alone "gatherers" position, the communication channels for the blocks of the two diverging groups have not been completely cut off. In other words, there was no complete detachment. In this respect, note that those inside block 8 play a key role due to the reciprocation of ties from those inside block 2 and 4.

Comparing the equivalence structure of the emergency response period to the pre-earthquake stage, one of the most noticeable differences was the expansion of role differentiation or diversification of the information "gatherers" position. Before the disaster, just one cluster of actors occupied the position of gathering information as well as on the receiving end of the communication ties. Shortly after the crisis, four equivalence classes that performed the role of information gatherers were found. At the same time, the number of clusters that occupied position of "exchanger" and "activator" also experienced an expansion at this period of time. Unlike the pre-earthquake stage, some of the "gatherers" became more aware of taking the initiation of reaching out to the

"activators". Certain actors who occupied the position of activators seem to be perceived as more critical than others. To be more precise, those inside cluster #8 tended to be information "hub" not only directing communication among "activators" but also among "gatherers". Therefore, I would argue that based on the structural evidence showed during the emergency response period, there were two emerging positions. One was the position exemplified by cluster #8 and its performance could be categorized as playing the role of "coordinator" in terms of directing the information sharing "traffic" among members in different structurally equivalent positions. The other position, which could be argued as a sub-category of "gatherers", was occupied by those playing the role of "respondents", particularly exemplified by the reciprocation behavior like those in cluster #2 and #4 towards communication connection "activators". Structurally speaking, since each one of the four "gatherers" was autonomous or separated from the actions of another, with the exception of clusters #2 and #4, the only way that they receive information was somewhat dependent on how active the information "exchangers" were at this particular period of time. On the other hand, those inside blocks #2 and #4 did not limit their choices by being on the receiving end of the information communication ties alone. By responding to the tie initiation efforts from activators, the amount of information that their members receive were dramatically increased.

Another significant structural feature change for the emergency communication network was the convergence of positions for the state and the market actors. Recall that during the pre-earthquake stage, the two actors were separated and each occupied in different class of positions. At this time stage, the two aggregate actors joined inside the equivalence role class #1. A close examination of the structural embeddedness of block #1 in the image diagram shows that the members in this particular cluster turned out to be the only one among the "gatherers" to be reached out by all four "activators". This means that both the state and the market in this cluster #1 must be perceived as having a critical and important role among all the civil society actors in the activator's position.

In summary, the communication structural development of the emergency response period showed characteristics of position maintenance and diversification at the same time. The role of information "gatherers" and "exchangers" were being sustained from the pre-earthquake stage. A slight divergence inside the "gatherers" position was formulated and could be categorized as "respondent" behavior. A new position in information "coordination" also emerged among civil society actors themselves. One important factor is that the formation of these structural roles all arose out of the agency activities within the domain of civil society. At the same time, actors in the civil society domain who occupied the "activators" position were also aware of the importance of their

connection towards the state and the market. In order to determine whether there were incidences of long term socially accepted and recognized roles emerging, I move on to the next section discussion the CONCOR output from the recovery period.

Long-term Recovery

Examining the CONCOR output from the density matrix shown below, the communication network maintained to have the same number of role equivalence positions as that of the emergency response period. Again, there were no isolated clusters over the long term. A glance at the density matrix and the block image (table 8.15 and table 8.16) revealed that there was still a division between clusters that focused on information gathering and clusters focused on communication tie-building.

Table 8.15. Recovery Period Communication Network Density Matrix (CONCOR Analysis)

Positions	1	2	3	4	5	6	7	8
1	0.011	0.005	0.003	0.000	0.026	0.016	0.000	0.000
2	0.015	0.018	0.000	0.011	0.032	0.014	0.000	0.020
3	0.006	0.002	0.001	0.002	0.000	0.006	0.006	0.004
4	0.009	0.005	0.002	0.000	0.010	0.000	0.000	0.013
5	0.465	0.189	0.084	0.030	0.522	0.227	0.080	0.250
6	0.449	0.388	0.323	0.227	0.482	0.464	0.236	0.330
7	0.129	0.179	0.071	0.120	0.140	0.200	0.000	0.300
8	0.195	0.184	0.028	0.031	0.138	0.102	0.175	0.232

Note: R-squared = 0.266

Table 8.16. Recovery Period Communication Network Block Image of CONCOR Analysis

Positions	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	1	1	1	0	1	1	1	1
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	0	1
8	1	1	0	0	1	1	1	1

Note: Density=0.06

Actors inside clusters from 1 to 4 did not initiate any type of communication either towards themselves or towards all other clusters. On the contrary, actors from clusters 5 to 8 tend to exhibit active agency behavior by being on the initiator's side towards members of other clusters.

The block diagram shown in figure 8.13 provides a visual depiction of the structural position occupations among different equivalence classes.

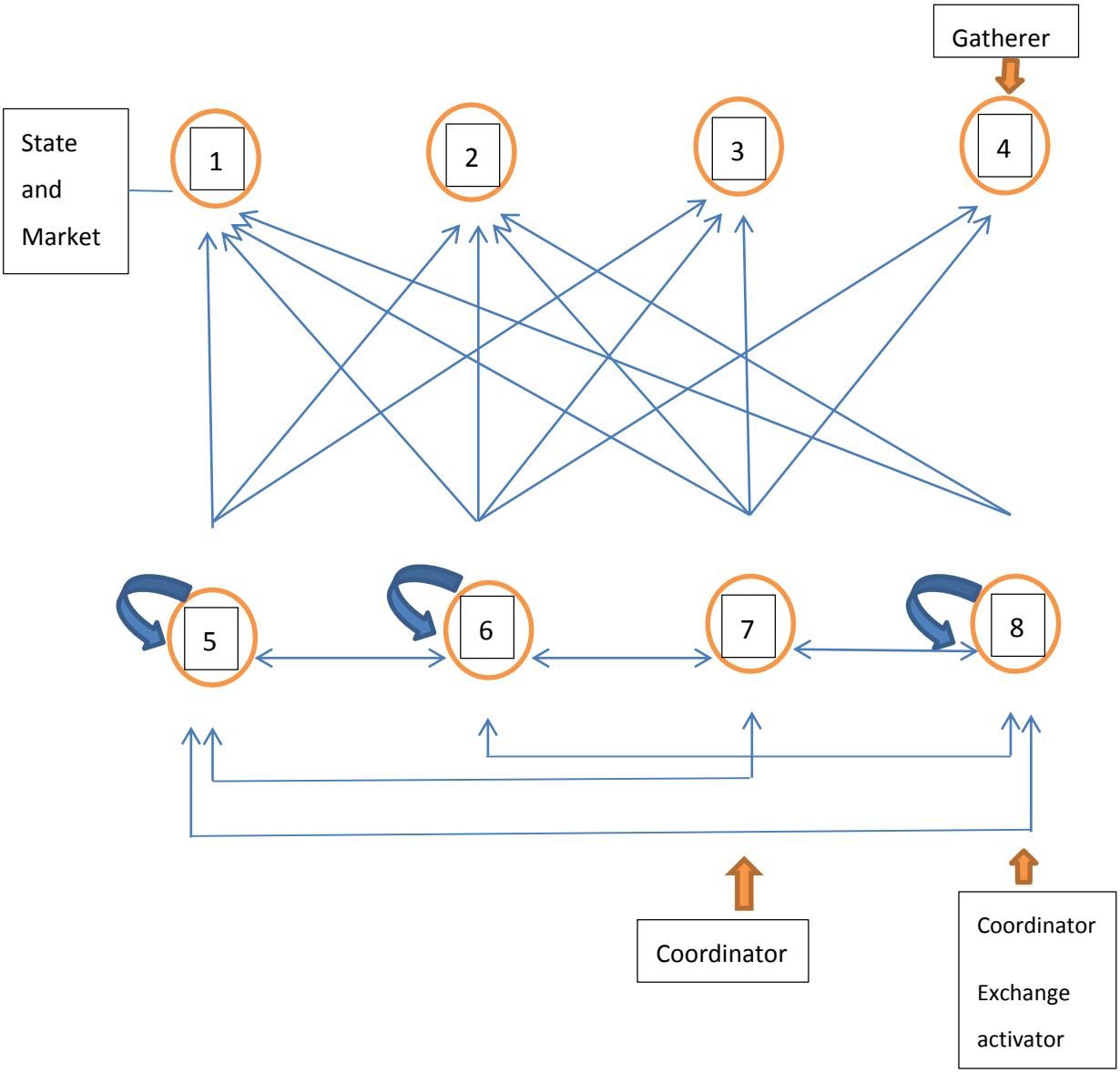


Figure 8.13. Recovery Period Communication Role Structure (Block Diagram of CONCOR)

From the outset, we can see that the two basic categories containing clusters playing both the "initiator" and the "gatherer" roles were being sustained structurally. Although actors found inside of each block might be different from the emergency

period, it is important to recognize that the maintenance of roles in a general sense. In terms of efforts spent on relationship initiation, clusters 5, 6, 7, 8 can be categorized as "activator" for this period of time. The only exception was regarding block #7, whose members turned out not to be so enthusiastic about engaging in information exchange among themselves. Secondly, more "holes" in the communication network became apparent, particularly when actors in cluster #8 were not likely to send any ties towards those in blocks 3 and #4. Thirdly, the four positions in terms of information gathering remained to be differentiated among blocks 1, 2, 3, and 4. Therefore, these evidences revealed the fact that for information network structures, the transformation in actor positions forming different types of roles did have a tendency to be institutionalized over the long term.

While the general categorical positions of information gatherers and exchangers were being maintained over long term recovery process, certain sub-categorical roles that temporarily formed during the emergency period dissipated in the long run. One example was the information "coordinator" position as a sub-type among "exchangers". During the time shortly after the earthquake, actors who performed this specific role not only tended to reach out towards those in all other equivalence clusters but also were more likely to receive ties from actors who are information gatherers. Thus, the coordinators

tended to perform as an intermediary role in connecting “respondents” and “activators”. However, as the tendency for reciprocation from the clusters in gatherers category towards those in the activators category disappeared at this stage of time, so did the roles of coordinators and respondents accordingly. In general, the emergency response stage shortly after the disaster prompted a surge in the number of role differentiations arising out of the actions inside the civil society domain. As the time factor settled in over the long run, the main categorical roles that differentiate the equivalence classes based on actor attitudes towards information exchange, such as the roles of “activators” and “gatherers”, did tend to be institutionalized. But the activities between these two categories also became more distant with the termination of reciprocated connections. At this stage of time, what kept the members from these two categories of positions connected was ultimately the maintenance of the outreach tendency on the part of “activators”.

Here, I would like to argue that the maximum position diversification emerged during the emergency response stage did indeed provide structural facilitation for information to be passed through and exchanged among various equivalence classes of actors. But the factors that were perceived to be important for maintaining the functioning stability over time might be different from the perspective of actors. Rather than stressing

the importance of opening up more channels for communication and exchange during the immediate response period, the long term recovery stage was when civil society actors started to focus more on the commitment side of their own roles within the social structure. Therefore, the disappearance of the self-directed tie of cluster #7 and the reciprocated connections from cluster 2 and 4 towards cluster 8 can be interpreted as an emerging sign of the development of a sense of independence and autonomy. This kind of autonomy, particularly for those newly formed civil society actors, was reflected through the awareness for improving their own functioning capacity over the long run, as discovered by the qualitative sections of the research. The emergency period was a time for them to grow in terms building connections and trust among each other, while the recovery period signified a stage to learn to "stand-up" with their own effort. In other words, when taking into account of the environmental context within which the actors were making their decisions, the changes in actor behaviors over long term recovery stage further clarified how civil society perceived its own role in ways of making commitment in the field. Revealed structurally, this was demonstrated by the sustainability of the two main position categories alongside with the increasing autonomy of action among actors inside the different equivalence classes. Such evidence can also be

interpreted as an awareness and willingness for civil society actors to "mature" with their "independence" spirit.

At the same time of recognizing their own responsibilities for development in the long term, the civil society actors also maintained their interests in keeping a sustained relationship with both the state and the market sector. Examining the results from the "partition diagram" at this stage, the state and the market domains remained to be joined together occupying the same position in cluster #1. The image diagram further showed that the civil society members that occupied the "activator" position were all more likely to reach out towards the state and the market sectors in cluster #1. Two implications can be made from this outcome. On the one hand, the government agencies and the private enterprises maintained to be structurally equivalent with each other in the long run. They were both perceived to perform the role as information gatherers from those civil society actors who were exchangers and tended to be active in building communication channels. As the definition of the structural equivalency suggests, the state and the market sectors at the recovery stage also had similar patterns of ties connected towards them with those members from clusters 5, 6, 7 and 8. This means that the information gathered by agencies in both sectors tended to be of similar sources from the civil society domain. On the other hand, from the civil society's perspective, the state and the market domains

remained to be structurally autonomous in terms of information exchange over the long run. This leads us to another feature of the structural transformation being maintained during recovery period. And it is the tendency for exchange-oriented civil society actors to have the tendency not only maintain cross-sector relationships but also sustaining a focus on reaching out towards one particular group of civil society actors in the "gatherers" position category. Note that with the differentiation of those performing the "gatherers" role during the emergency response period, not just the state and the market sector were being joined together in one structurally equivalent class, the process also distinguished a few equivalence groups inside the civil society domain. Role cluster #2 occupying the "respondent" position and the "gatherer" position were being consistently perceived as the "go-to" group for connection-building. Although the identification of actors inside this cluster might be different for the two periods after the earthquake, the fact that these roles existed as an autonomous structural equivalence class composed of civil society actors alone demonstrated that the perceived status for the civil society domain in terms of information outreach was equally important as that for establishing ties towards the state and the market domains. Structurally speaking, the roles performed by the government agencies and the private enterprises shortly and long term after the earthquake were no "superior" compared to their civil society counterparts. The actors

inside the three domains tended to be equally perceived within the context of information exchange and communication building. Thus, this finding led us back to the research endeavor of further defining the concept of "power" in the context of understanding civil society during disaster response and recovery. If the current structural position identification can be thought of as part of resilience characteristics of exemplified with the emergence of civil society, then, a "resilient" power structure in the Chinese context showed that it was one with shared responsibility among the domains of civil society, state, and the market. Thinking strictly in terms of relationship structures for communication exchanges, civil society actors persistently occupied similar positions with the government agencies and private enterprises when it came to gathering information. In addition, these "resilient power" structures tended to be institutionalized over time when the long term recovery stage is being taken into consideration.

Collaboration Role Structure

Pre-earthquake

In the last section, I examined the emergence of positions and roles of the collaboration network structure. The findings showed an initial structural transformation

process characterized by: 1) primary categorization of positions throughout the periods after the disaster; 2) further differentiation of equivalence clusters as a result of agency initiative actions, particularly during the short term response stage; 3) the growing sense of independence and autonomy of civil society actors for long term commitment; 4) a type of shared "resilient power" characterized by emerging structural equivalency among the state, the market, and the civil society domains. The general position categories amidst of the structural transformation were being sustained in the long run. There were also signs of culturally recognized roles emerging as certain positions were being institutionalized over time. In this section, I explore another aspect of relationship-building behavior. Compared to communication relationships, project collaboration structure reveals a more committed side of actions among civil society actors. While it can be related to communication behaviors, the examination of the structural equivalence positions for the collaboration behavior could demonstrate other important aspects of emerging relationship-building characteristics that the communication network might not be able to capture over time.

I now examine the CONCOR results for the collaboration network for the period before the earthquake. From the density matrix table, we can tell that 5 positions (see

table 8.17) were found and block #5 turned out to be an isolated group without any attachment to any of the other four position clusters.

Table 8.17. Pre-earthquake Collaboration Network Density Matrix (CONCOR Analysis)

Positions	1	2	3	4	5
1	0.013	0.010	0.017	0.056	0.000
2	0.177	0.068	0.000	0.065	0.000
3	0.006	0.015	0.036	0.000	0.000
4	0.000	0.000	0.030	0.000	0.000
5	0.000	0.000	0.000	0.000	0.000

Note: R-squared = 0.101

After transforming the density matrix to a "block image" matrix through the comparison of the overall density of the network, it became clear that the collaboration relationship among block 1, 2, 3 was the closest among all other connections. Except the fact that those in equivalence class 2 were less likely to reach out to those in class 3, the rest of the inter-class connections among these three clusters were all well activated and reciprocated. The block image from table 8.18 demonstrates the close information exchange ties among cluster 1, 2, and 3.

Table 8.18. Pre-earthquake Collaboration Network Block Image of CONCOR Analysis

	1	2	3	4	5
1	1	1	1	1	0
2	1	1	0	1	0
3	1	1	1	0	0
4	0	0	1	0	0
5	0	0	0	0	0

Note: Density = 0.0040

Also note that members of each of these three clusters tended to build project collaboration ties within cluster boundaries, thus making them playing a role of active collaborators in terms of both within and across cluster boundaries. Secondly, there seemed to be an intricate relationship between these three active collaborators and those in cluster #4. The diagram (see figure 8.14) showed that members from cluster 1 and 2 were both likely to reach out to those in #4 but without the latter reciprocating. Instead, block #4 turned out to be active towards those in block 3 when it comes to project collaboration.

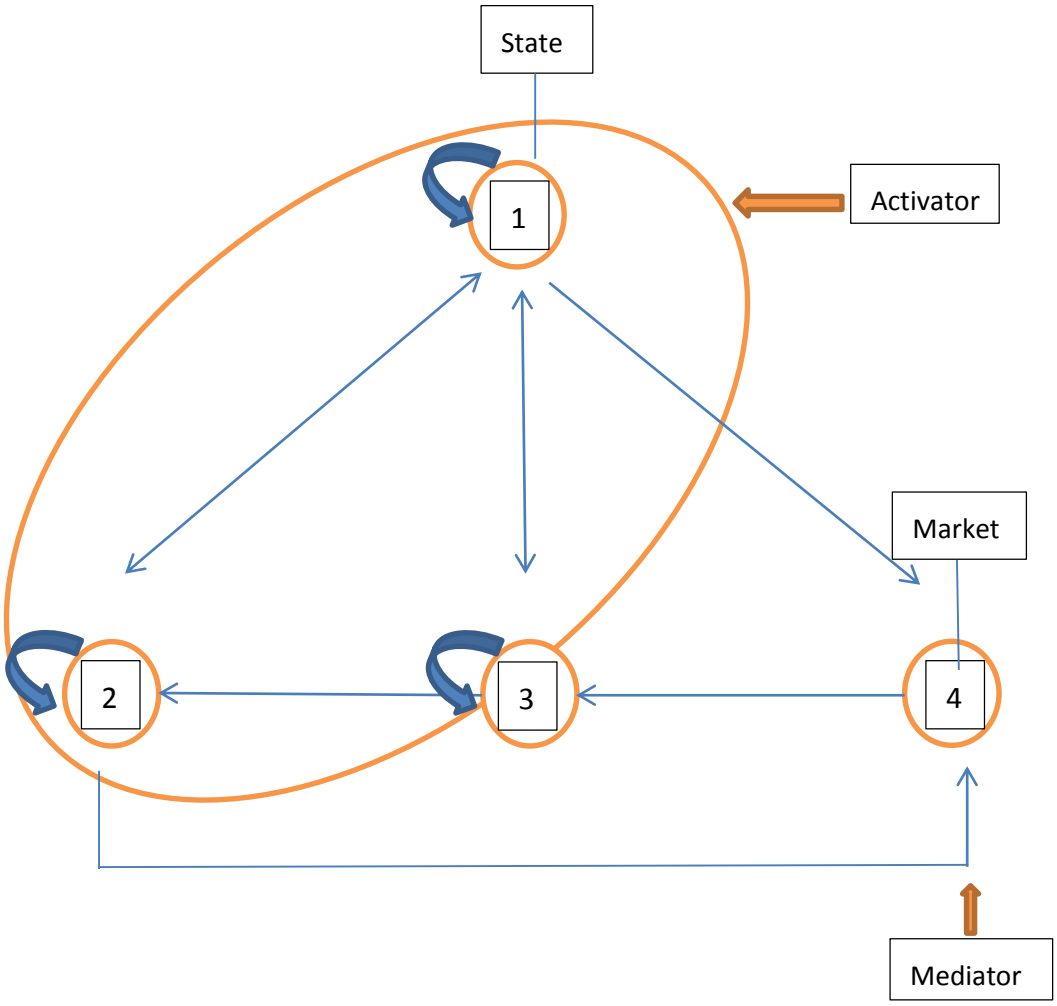


Figure 8.14. Pre-Earthquake Collaboration Role Structure (Block Diagram of CONCOR)

Therefore, one can infer that there was a clear tendency for preferential and selective collaboration tie-building during the period before the earthquake. In comparison to the communication network at this same stage, the similarity was that a structural foundation characterized by the inter-connections inside one group of equivalence clusters (#1, #2, #3) was set in place. All the members in this group were active in terms of forging collaborations outside and within clusters. On the other hand, a

critical difference between two types of network environments was that no cluster performed a role of simply on the receiving end of collaboration initiations. Equivalence class #4 was more likely to be reached out to by two "activators" but then only directed its collaboration attention towards a different activator cluster.

A closer look at the actor composition of the four clusters revealed further details regarding the collaboration activities of the state and the market sectors. First of all, the state domain was inside role cluster #1, which was categorized in a position of "activator". What this means is that from the civil society's perspective, the government agencies inside the state domain would be active in terms of building up collaboration ties both towards other equivalence classes and towards those inside its own position block. Secondly, the business sector was joined inside equivalence class #4, whose members tended to exercise certain degree of discretion in favor of building collaboration ties with only those in cluster #3, but not #1 and #2. This means that before the disaster, private enterprises were perceived to be already actively seeking collaboration connections with civil society actors that were in existence at that time. However, this connection was only particular to one structurally equivalent class inside the "activator" category. Those civil society actors inside cluster #3 were the only ones that were more likely to receive collaboration initiatives from the private sector. This rendered cluster #3

to be perceived as belonging to another slightly different category than activator cluster 1 and 2. In this case, I would call it “coordinator”.

Emergency Response

Compared to the structural changes for the communication network shortly after the earthquake, the number of equivalence classes for the collaboration network also experienced an increase. The density matrix and block diagram (see tables 8.19 and 8.20) below demonstrated such expansion of structurally equivalent position clusters from 5 to 7 immediately after the disaster.

Table 8.19. Emergency Response Collaboration Network Density Matrix (CONCOR Analysis)

Positions	1	2	3	4	5	6	7
1	0.041	0.049	0.015	0.017	0.000	0.000	0.000
2	0.061	0.038	0.014	0.006	0.000	0.000	0.019
3	0.082	0.018	0.033	0.036	0.000	0.000	0.032
4	0.006	0.005	0.002	0.009	0.000	0.000	0.007
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.500	0.000
7	0.000	0.000	0.000	0.000	0.000	0.000	0.033

Note: R-squared = 0.033

Table 8.20. Emergency Response Collaboration Network Block Image of CONCOR Analysis

Positions	1	2	3	4	5	6	7
1	1	1	1	1	0	0	0
2	1	1	1	0	0	0	1
3	1	1	1	1	0	0	1
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	1	0
7	0	0	0	0	0	0	1

Notes: Density = 0.0127

However, a closer examination of the measures across the different cells inside the table showed that there were still certain degrees of disconnectedness among the 7 clusters based on the number of zero-blocks found. For example, block #5 seemed to be an isolated group and the block #6 only tended to develop ties with members among itself but none of the other blocks. After conducting the density comparison with the overall network density measure, the block image provides a clearer general outlook of the structural position divisions. Note that a densely interconnected group of equivalent classes remains among clusters 1, 2, and 3. Members inside these three blocks not only were more likely to reach out to each other but also tended to initiate collaborations within clusters. The collaboration connections outside this cluster group tend to be sporadic towards clusters 4, 5, 6, and 7.

The image diagram shown in figure 8.15 below further clarifies the relationships among the seven clusters graphically.

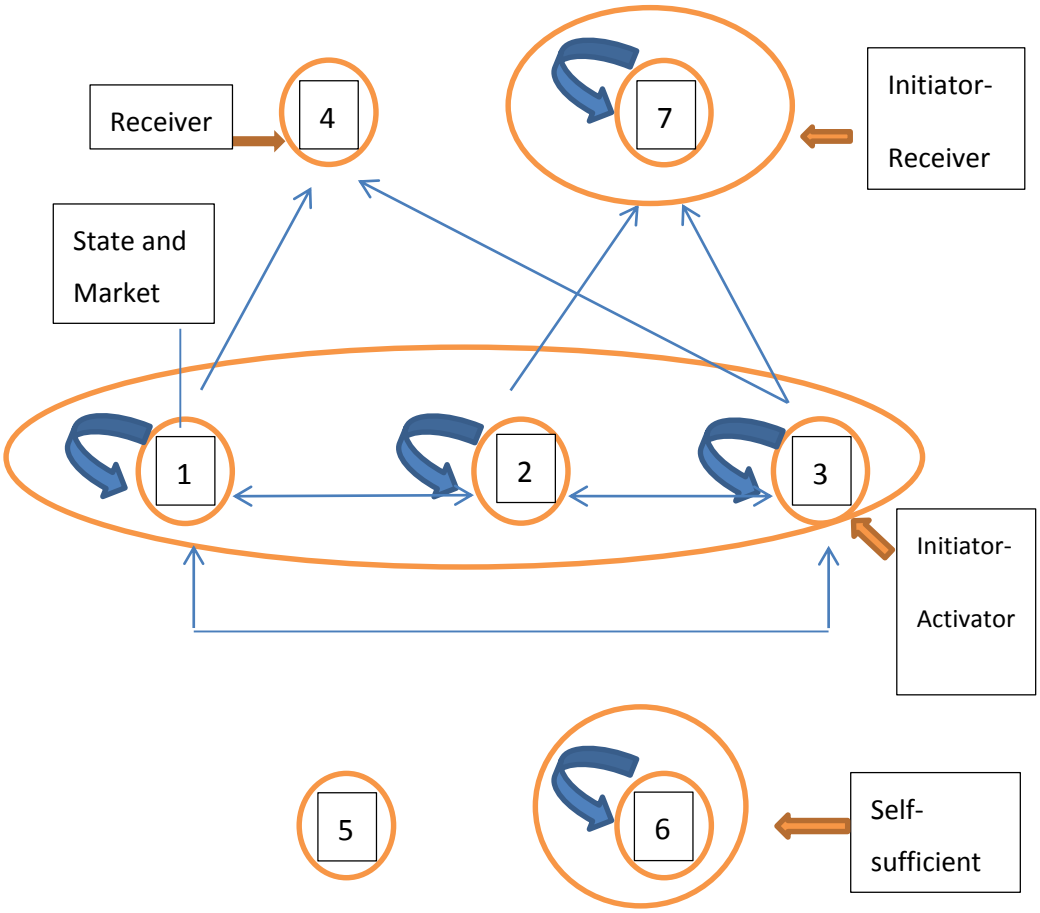


Figure 8.15. Emergency Response Collaboration Role Structure (Block Diagram of CONCOR)

First of all, one of the most distinguishing features for this period of time was that the main "activator" position category remained among three different clusters and the inter-connections among them became complete. This means that the event of a catastrophic

disaster did not shatter the existence of an action-oriented structural base of the collaboration network. With the emergence of newly formed civil society actors at this stage of time, the "activator" foundation of the structure was being maintained and enforced. Actors inside these three clusters were more likely to collaborate across block boundaries as well as building projects with those who were structurally equivalent with themselves inside cluster boundaries. Secondly, the clusters #4 and #7 emerged as two new structurally equivalent positions. Note that those who occupied the "activators" positions tended to send out ties towards these two clusters but these connections were not being reciprocated. Within the context of a collaboration network, this tendency can be interpreted as a sense of selectiveness in developing collaboration project partners. In this case, actors inside cluster #4 and #7 were perceived to be "advantageous" because they tended to attract collaboration initiatives from activators and were provided with the opportunity to pick and choose. Equivalence class #7 occupied a unique position because it not only attracted attention from the activator's category but was also active in building collaborative projects among members within its own boundary. Thirdly, we can see that two separate clusters was formed and disconnected from the main graph. Members of cluster #5 occupied the same position with each other basically due to their in-action in terms of having any types of connections with each other and toward others in other role

clusters. Those inside the equivalence class #6 also tended to be in isolation, but the members were particularly active in collaborating with others only inside the block.

Therefore, in general, the emergency response collaboration structure maintained a structural core performing the "activator" role in terms of actively building collaborative projects within and across equivalent classes. The positions occupied by actors at this time stage also expanded towards selectivity in project development. A group of "preferred collaboration partners" clusters was being identified. At the same time of these kinds of position category sustainability and enhancement, the collaborative network was also characterized by emergent positions that were completely separated from the main connected structure among other clusters. Cluster #6 can be named to play the role of "self-sufficient" collaborator as its members were not likely to send any outgoing initiatives outside the block boundary.

Regarding the position differentiation with the state and the market actors, the partition diagram showed that the two actors were joined together inside block #1 shortly after the earthquake. Since there were technically no outgoing ties from these two actors as a result of the research design, this position change with both of them entering the "activator" category could be interpreted as a signal that both of them were perceived as a

critical collaboration partners among the civil society actors. The evidence of them occupying two structurally equivalent positions alongside with other civil society actors at this time had two implications. On the one hand, the government agencies and the private enterprises shortly after the earthquake were perceived to play an active role in having collaborative connections with the civil society actors across and within structurally equivalent clusters. This demonstrates the integrated collaborative activities across the three domains of the state, the market and the civil society during the emergency response stage. On the other hand, the particular roles played by the three domains can be further differentiated. Certain civil society actors could indeed occupy positions that attracted collaborative partnerships from actors of all three domains. The unique positions of those inside cluster #4 and #7 illustrated this point. Furthermore, the separated collaborative actions of those inside cluster #6 showed that civil society actors were actually capable of being "self-sufficient" in terms of forming close collaborative projects. Therefore, there was a general sense of role diversification shortly after the disaster event and these structural positional changes tended to give signs for self-awareness in terms of the ways that the collaborative projects could be expanded among the civil society actors. In order to see if these roles were able to sustain themselves over

time for implications of institutionalization, we need to turn to the results from the recovery period.

Long-term Recovery

Observing the density matrix and the block diagram output from the tables (8.21 and 8.22) below, it is clear that the total positions being identified is one less than the period before.

Table 8.21. Recovery Period Collaboration Network Density Matrix (CONCOR Analysis)

Positions	1	2	3	4	5	6
1	0.002	0.000	0.010	0.004	0.000	0.000
2	0.000	0.004	0.015	0.006	0.000	0.000
3	0.125	0.047	0.058	0.082	0.021	0.000
4	0.028	0.013	0.017	0.037	0.028	0.000
5	0.000	0.000	0.021	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.000

Note: R-squared = 0.048

Table 8.22. Recovery Period Collaboration Network Block Image of CONCOR Analysis

Positions	1	2	3	4	5	6
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	1	1	1	1	1	0
4	1	0	1	1	1	0
5	0	0	1	0	0	0
6	0	0	0	0	0	0

Note: Density = 0.0164

Among the six role clusters, one was detached from the other five blocks. From the block image table 8.21, there did not seem to be any expansion in positions and roles. Instead, the "activator" base of the structure experienced a "shrinking" process from originally composed of three clusters during the emergency response to two over the long term. However, the dynamic of this decreasing number of "activators" was accompanied by an expansion among those occupying the "preferred collaborator" position. Note that only the members inside cluster 3 and 4 were actively seeking collaboration projects across and within cluster boundaries while being reciprocated with their efforts. Three clusters were now in positions that tended to attract collaborators but they themselves were less likely to extend initiatives on the first-move. Unlike the non-reciprocating relationships between those who occupy the collaboration "recipient" position and those occupying the "initiator" position during the emergency response period, cluster #5 was now more likely to reach out to cluster #3 inside the "activator" category, thus for the first time among the periods before and after the earthquake forming an reciprocated tie connection between the two clusters from two different position categories. This inferred that the institution-building conditions were further matured as actors occupying receiver and activators started to show mutual selection tendencies through project collaborations.

Another position characteristic for this period of time was the identification of a stand-alone equivalence class of #6. The actors inside the cluster were structurally equivalent as none of them tended to reach out to each other for collaboration and neither did they seek relationships towards other clusters.

Further examining the partition diagram (see figure 8.16), we see that the state and the market sectors were joined together in cluster #1.

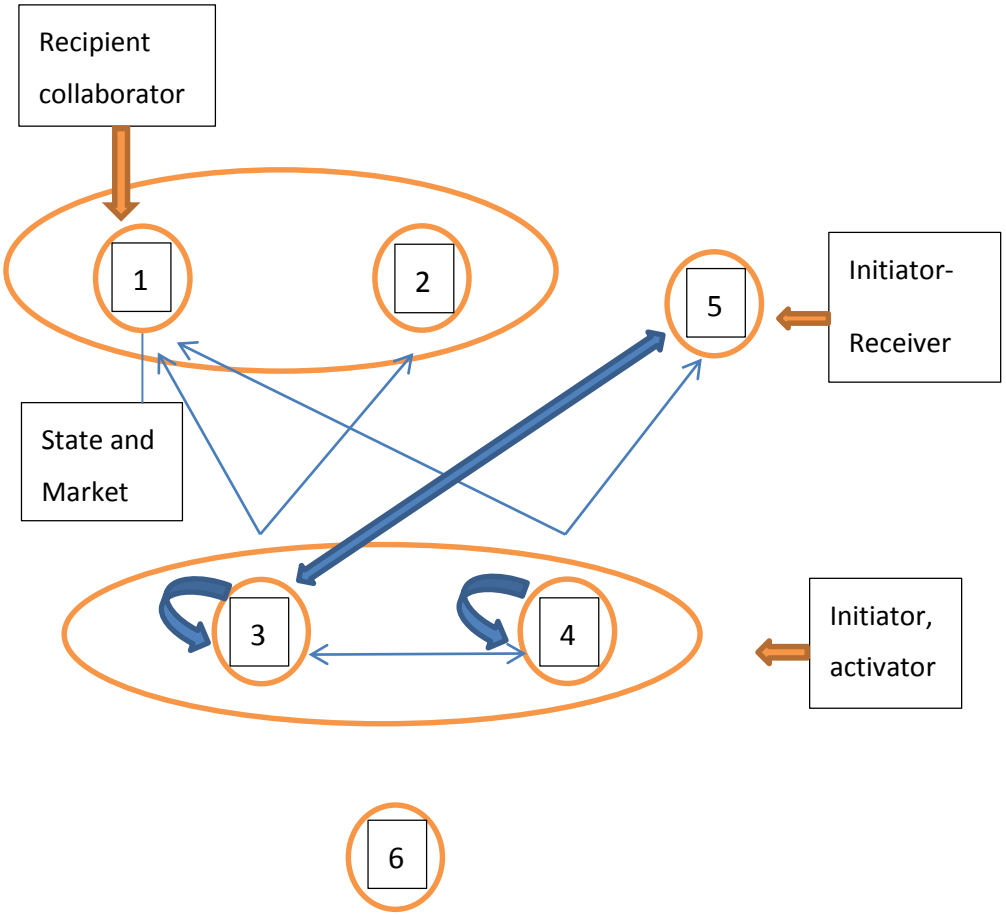


Figure 8.16. Recovery Period Collaboration Role Structure (Block Diagram of CONCOR)

Although the actors inside this particular equivalence block (#1) did not tend to establish collaboration ties among each other, they were more likely to be reached out by those inside clusters #3 and #4. Therefore, both the government agencies and the private enterprises were perceived as preferred collaborative partners by civil society actors playing the role as "initiators". Comparing the positional transformations of the state and market actors before and after the earthquake, it became clear that the emergency response period did prompt the "joining" process for the two sectors to be clustered together in terms of occupying structurally equivalent positions. And they remained to be structurally equivalent with each other over the long term recovery period. In terms of the roles they played alongside with the civil society actors throughout the three periods, the state and the market sectors were involved in different types of performances. Recall that during the pre-earthquake stage, the state actor tended to play the role of an "activator" while the market sector tended to be a "reactor" in the sense that others were more likely to reach out towards it for collaborative projects. During the period shortly after the disaster, both actors were perceived to become active in conducting cross-sector collaborations and they tended to build similar ties towards others in the network. Over time, they tended to behave in structurally equivalent ways as belonging to the same positional cluster. However, during the recovery period, their roles switched from one

that was more active to one that was more on the receiving end of collaborative initiatives from other civil society actors.

From the stand point of understanding the nature of cross-sector collaborations, the following implications can be made. First of all, let's look at the change patterns of self-directed ties from clusters that the state and the market sector resided over time. For the period before the earthquake, the state was actively involved in collaborating with those civil society actors that occupied approximately similar positions. At that time, the market sector was not as "close" to the state in terms of structural equivalency and collaborative interactions as that of civil society actors. Immediately after the disaster, the three domains became increasingly "integrated" not only in the sense that the state and the market actors occupied structurally equivalent positions with other civil society actors in the same cluster, the actors inside the three domains also had a tendency to actively collaborate with each other. The collaborations that took place during this period of time were characterized by interactions across and within boundaries of structurally equivalent classes. What this means is that the emergency response stage actually enhanced the tendency for active cross-sector collaborations and that all actors inside the three domains played a proactive role in building collaborative projects. During the long term recovery period, while the state and the market remained to occupy structurally equivalent

positions, their roles moved from being “activators” to a tendency towards “reactors”. The disappearance of the self-directing tie within the cluster they resided in showed that the state and market became more autonomous in terms of collaboration. At the same time, their individual relationship with the civil society actors remained to be integrated as others still perceived them as preferred collaborative partners. The nature of collaboration ties for the state and market actors in particular during the recovery period can be generalized as one that focused on cross-equivalence cluster connections as compared to the two periods before.

Chapter 9

Conclusion

Overview

In this study, I investigated the role of civil society in developing long-term collaborative efforts for urban settlements to cope with risks and uncertainties associated with catastrophic disasters. I adopted a mixed methods research design involving the collection of quantitative and qualitative data concurrently. In the first phase of the data analysis, social network data were studied to answer two sub-components of the overarching research question. One was the processes of actions and interactions among group and organizational actors that triggered the emergence, sustenance, and the transformations of institutional structures inside the civil society domain. The other component was to depict the rules governing the dynamic changes of network evolution using the longitudinal actor-based models. In the second phase of data analysis, qualitative data from civil society actors that occupied significant roles and positions in the network structures were being studied to explore the sources and the motivational driving factors of their formation and self-organizing processes. In this exploratory

follow-up, the meaning of civil society in understanding the driver of agency action through an institutional change process was examined. This phase of the study is designed to build and expand on the initial quantitative results.

The main purpose of this conclusion section is to integrate the findings from both the quantitative and the qualitative analysis. Here, I first illustrate the summary of findings integrating the quantitative and qualitative findings in answering the overarching research questions. Then, I present a general theoretical framework for civil society in action during the time of crisis. Thirdly, I discuss the main implications for policy-making and planning decision-making.

Starting out from the structural analysis examining the role of civil society in the 2008 Wenchuan earthquake recovery, I documented the process of how actions unfolded among civil society actors through the following types of basic network characteristics: similarities, social relations, flows, and interaction contexts (see table 9.1). I looked at the action structure for each of the distinct time periods comparing group/organizational action behaviors before and after the earthquake event. Then, I developed a longitudinal network model in order to sort out the patterns of change as well as the rules governing the network evolutions and co-evolutions of the two network environments over time.

With signs of institutionalization of the civil society domain, I then examined the civil society domain as whole in terms of its interactions with the state and the market domains. These action and sustenance processes of the Chinese civil society after the disaster event together forged the role formation within a restructured social condition. Lastly, in order to trace the origin of the institutional change and development within the domain of civil society after the earthquake, I conducted in-depth analysis to examine the qualitative data such as informant interviews and field notes. The procedure can be summarized in figure 9.1 as a map of my research investigation in understanding the role of civil society in China after a catastrophic disaster.

Table 9.1. Network Theory Guideline

Similarities			**Social Relations**	**Flows**	**Interaction Contexts**
Location	Attribute	Activities	-Communication -Collaboration	-Information -Resources	-Before Disaster -Response -Recovery
Geographical proximity	-Registration Status, -date of establishment	-Women, -Children, -Environment -Livelihood -etc.			

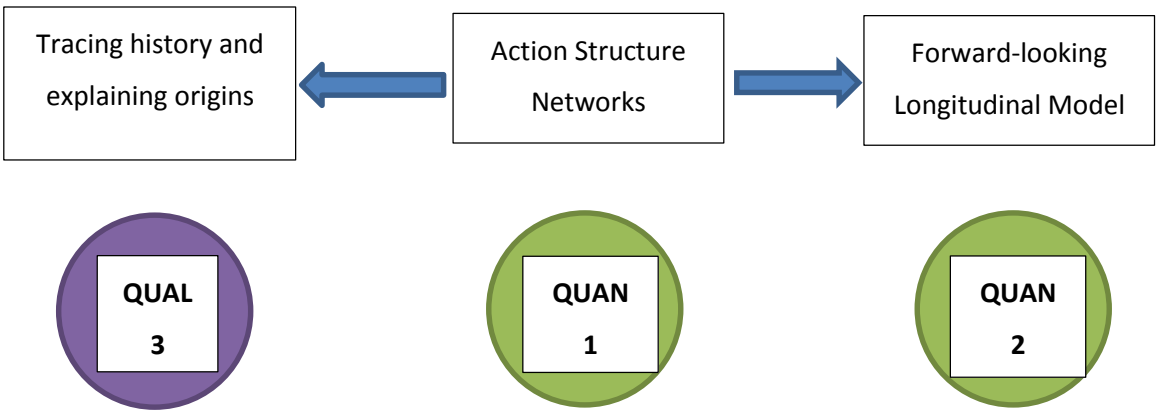


Figure 9.1. Research Framework (Data Analysis Sequence)

Resilience Formation: Chinese Civil Society in Times of Crisis

Sources of Power: Agency Freedom and Action

When tracing the sources of power in agency action within the civil society domain, I found that there were three levels of the resilience formation process. At the most basic level was the voluntary coordination and self-organization. This was followed by the creation of an institutional climate that either acted as enablers or obstacles toward the emergence and development of Chinese civil society in times of crisis. The third level was looking at resilience as a learning process for civil society actors to develop risk

awareness, thus being transformed through their own role in coping and adapting to change. Figure 9.2 below shows the summary of the findings[236].

[236] Please see Appendix 9.1 for the thematic summary for each civil society actor being investigated in this study.

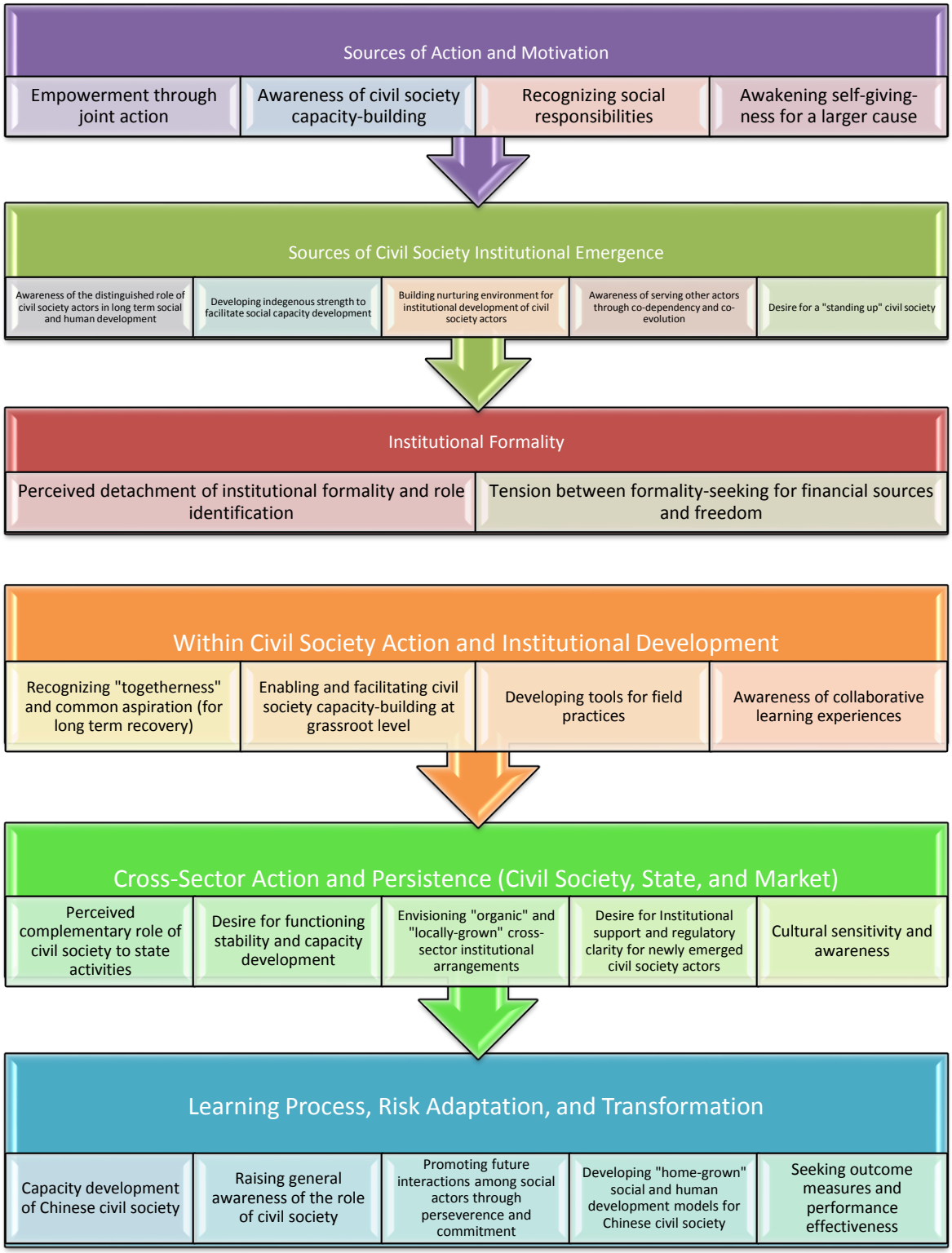


Figure 9.2. Meaning and Role of Civil Society in Driving the Processes of Institutional Change (Civil Society in Wenchuan Earthquake Recovery-Social Groups and NGOs)

Voluntary Coordination and Self-organization Process

I started out with the intrapersonal and intra-organizational level of analysis because the very first moments of agency actions after the disaster originated from this kind of self-organization process within which micro-level behaviors were observed. Essentially, the clarification of the emergence and the development of the civil society domain are conditioned upon understanding why agency actions were taken in the first place. As we can see from figure 9.2, at this level, the disaster brought about a sense of empowerment through the voluntary collective agency action shortly after the earthquake event. Individuals quickly recognized their role in making contributions to a larger cause to the social development of China. This marked a phase of awareness-building and perceived cognitions of civil society's social responsibilities.

Another stage of civil society development in the Chinese disaster recovery context was the sustainability of the agency actions in term of groups and organizations. The recognition and the willingness to maintain associational and organizational activities not just during the disaster response period but also the long term recovery period signified a transition point from merely voluntary coordination at the interpersonal level to the institutionalization of interactions at the organizational level, thus the

emergence of civil society domain. In this research study, the "emergence" aspect of the picture was defined as a process through which nonprofit social groups and organizations being formed institutionally and starting to build up communication and collaboration network relationships among each other, with the state and market domains towards long term commitment. Understanding the sources of this self-organization process from the civil society actors' point of view is critical in interpreting how civil society emerged over time and certain actors rose up to occupy pivotal positions in their network environments.

Results showed that the primary driving forces for the civil society actors to be persistent in their actions and working towards the institutionalization stage could be summarized as follows. There was a strong desire for the actors to develop domestic indigenous strength that formed by grassroots efforts that were "locally-grown" in nature in order to facilitate the social capacity-building not just during the disaster recovery phase but also the long term social development of the country in general. The actors increasingly recognized the inter-dependency of each other's existence for constructing a self-organized nurturing environment for the institutional development of others. One example of this force would be the formation of information and support platform-building initiatives emerged among the civil society actors particularly during the

recovery phase. This can be understood as one of the most distinguished factors to illustrate civil society actors' desire to perform independent roles as "standing-up" entities in relation to roles performed by the state and the market system.

Institutional Climate: Enablers and Obstacles

The second theme pertaining to understanding the sources of emergence and development processes of Chinese civil society after the Wenchuan earthquake was the institutional climate that the actors were at the same time actively construct and influenced by. The gradual recognition of institutional enablers and obstacles encountered by actors in the field revealed their expansion of focus beyond the actor level of agency into the interaction stage of existence.

I investigated the "institutional climate" that the actor was functioning in through the state of formality in terms of the focal actor's registration status. Through the experiences of informants representing their group and organizational actors, I first examined actor's own institutional challenges. Then, I focused on how such institutional climate could be understood in terms of the group's relationships with others inside the civil society domain, the state actor, and the market actor.

In general, informants representing different civil society actors perceived a strong linkage between obtaining formal legal registration status with seeking financial means for survival. However, there was a perceived disadvantage in gaining registered status by having sponsorships through the central and local governments, and it was the concern for the possibility of the loss of independency in making stand-alone decisions. Secondly, the actors valued the quality of the functioning as part of defining their identities. This factor was perceived to be detached from the institutional formality reflected in the actors' registration status. In other words, institutional formality, understood in terms of a state of existence when civil society actors gaining legal registration status under the current legal system in China did not prevent them from taking the agency initiative to develop the capability to achieve various kinds of functionings reflected by the space of network structures. In fact, how such institutional status was being perceived and approached by emerging civil society actors can constitute as the characteristics of pre-conditions for sustainable group/organizational actions during the long term disaster recovery.

Another aspect of the institutional climate had to do with the institutionalization of interactions among the civil society actors themselves. I found that the original motivations for within sector action initiatives generally originated by a sense of

"togetherness" or "camaraderie" that the actors saw themselves working towards for disaster response, recovery, as well as the long term social development. This was the phase when they started to recognize that capacity-building for the Chinese civil society would be a collaborative learning experience at the grassroots level. Actors also developed an awareness of the importance of effective field operational tools to enhance their functioning performance. The enabling and facilitating roles performed by the indigenous civil society actors were being maintained towards further institutionalization.

The last aspect of my investigation in the formation of institutional climate for civil society actors after the disaster involved the discovery of motivations for institutionalizing cross-sector communication and collaboration activities. This factor built on top of the institutional formality background and within-sector dynamics discussed earlier. The awareness of the drive for interacting the state and the market domains signified a primary condition of the readiness for civil society actors to perform as independent entities and thus setting the stage for their role development over the long term. By "cross-sector institutional development", the interpretation I took in this research study referred particularly to the collaborative efforts built by actors across the three sectors: civil society, state, and the market.

Civil society actors in general perceived themselves performing a complementary role to the functioning of the state in disaster recovery. The driving forces behind their interactions with the state and the market actors could be traced back to their desire for long term functioning stability and capacity development beyond the recovery stage towards being formally integrated into the social fabric of the society's normal functioning. This stage further led actors to recognize the needed institutional support and regulatory clarity that could be provided on the part of the Chinese government, especially at the local level. The institutional arrangement in the form of "cross-sector collaboration" was also being envisioned as an important feature that could be developed locally and indigenously. From the policy-making point of view, these specific conditions under which such institutional arrangements occurred are important for an in-depth understanding of how collaboration functionings arose from the state's perspective to develop possible tools that can facilitate the creation and enhancement of cross-sector collaborative projects in the incidences of disaster response and recovery.

Capability Formation: Communication and Collaboration

In this study, I extended Sen's (1992) capability approach in looking at agency freedom originally at the individual level to the group/organizational level. Each of the group/organization represented one civil society actor capable of initiating and building up communication and collaboration network relationships with other actors inside the civil society, state, and the market domains. Capability, which can be measured by the alternative ways of relating (functionings) in different functioning spaces (communication and collaboration), was built up through the agency actions originated from the civil society actors.

The network analysis of the study investigated the communication and collaboration structures of social groups and NGOs in China at three time periods: before the 2008 Wenchuan earthquake; the immediate emergency response period; and the longer-term recovery stage after the earthquake. The action structure of the two network environments maintained a process of forging institutionalization through the period of long term recovery rather than dissipating over time after the immediate surge in voluntary activities. The dynamics within the communication and the collaboration

network environments provided evidences of institutional emergence and development of civil society actors and their co-evolution with the social structures.

Process of Inclusion

Prior to the 2008 Wenchuan Earthquake, the primary network structure of the civil society domain was characterized by connections made among formally established groups/organizations. The tie initiation action from those performing "incubation" activities towards other NGOs was clearly observable. At the micro-structural level (see fig. 8.1), the beginning of the inclusion process was characterized by a concentration of outgoing activities initiated from larger formally established nonprofit organizations reaching toward a limited number of grassroots organizations that were not as well connected to the rest of the communication network.

Immediately after the earthquake event (see fig. 8.2), emerging social groups/organizations were being actively drawn into the network, and they also took the initiatives to communicate with those civil society organizations existed before the earthquake. This process created more triadic clustered type of relationships as more newly established actors emerged and joined the communication network. More of this type of inclusion was being maintained and stabilized during the disaster recovery stage

as the information exchange channels were expanded. At stage 3 (see fig 8.3) of this process, civil society actors inside the network developed an increasing capability to activate different forms of communication and collaboration relationships toward other actors. Each had more alternative "routes" in developing relationships with others as compared to the first stage before the earthquake. It is also important to note that such expansion of freedom to choose was not given from a change in outside environment, but was activated by the agency of the civil society actors themselves.

The inclusion process can also be illustrated by the actual network changes from time period 1 (t1) to time period (t2) in Figure 9.3. Note that before the earthquake (t1), the communication network was disintegrated by the co-existence of isolated actors and a group of connected ones. Starting from the response stage after the earthquake (t2), the activation of the inclusion process bonded the actors together, including those newly emerged civil society actors. In Figure 9.4, similar inclusion process can be observed for the changes in the collaboration network after the earthquake, but the integration was not as comprehensive as the communication counterpart with the existence of some isolated actors during the emergency response stage.

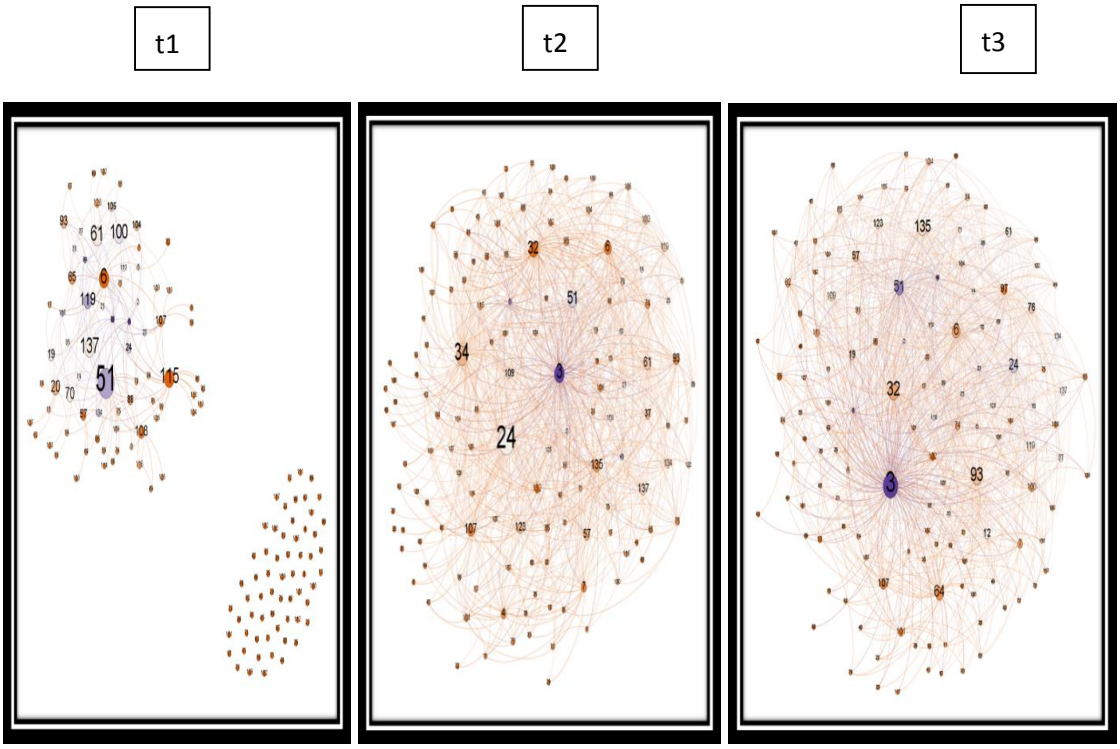


Figure 9.3. Communication Network Structure Evolution

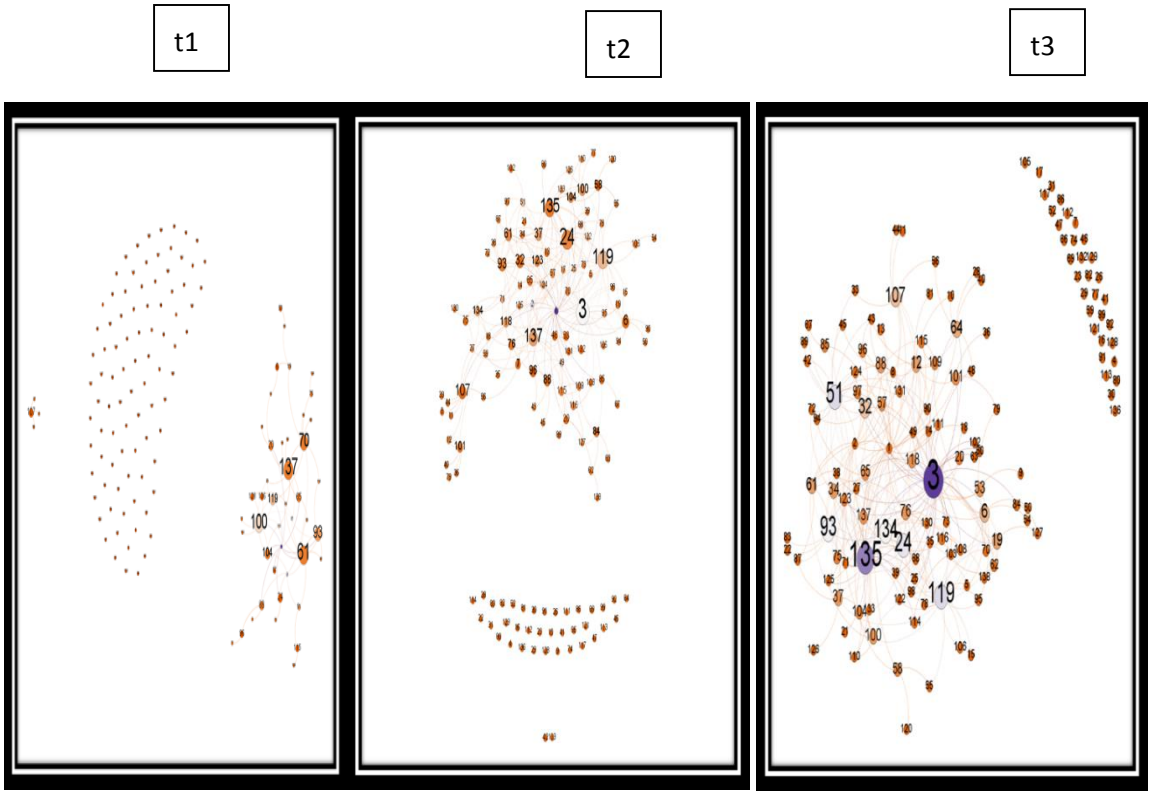


Figure 9.4. Collaboration Network Structure Evolution

Emergence of Structural Resilience

As soon as the joining and inclusion processes took place after the earthquake, both the communication and the collaboration networks were activated towards high level of cohesiveness. The civil society domain in general experienced from a state of estrangement, ignorant, and self-sufficiency to one that exuberate an energy of agency freedom, trust, and supportiveness of civil society actors for each other. The dynamics then proceeded with signs of action persistence demonstrating the level of commitment long term after the disaster event. In general, facing a catastrophic disaster that normally induces a significant level of stress that debilitate the impacted society to act and cope especially right after the event, the Chinese civil society not only enacted its own capability functionings through a dramatic increase in outreach activity concentration. Such capability was reinforced by the simultaneous empowering process worked out through mutual recognition and trust among actors. Such is what I called the characteristics of an emerging resilient social structure.

In the Chinese case, one of the most distinguished features was in the strengthening of such resilient structure, which essentially involved two factors. On the one hand, there was the role adoption by actors willing to playing as intermediaries in connecting others that would not have been known of the existence of each other

otherwise. On the other hand, the dynamics of the motivational behaviors represented by the communication networks coexisted with the dynamics of the commitment behaviors represented by the collaboration networks. The two processes worked hand-in-hand to ensure the strength of resilience being sustained all the way through the long term recovery stage.

Table 9.2.1 shows the statistics summary depicting the emerging process of change in the civil society domain after the disaster event. The symbols of "t1", "t2", and "t3" stood for the time stages of before the 2008 earthquake, short-term response period, and the long-term recovery period respectively. I used the out-degree centralization measures (overall cohesion and integration of the network graph towards actors initiating ties) to represent the "emerging structuration" process. This is to highlight the proactivity on the part of civil society actors. The in-degree centralization measures (overall integration towards actors receiving ties) represented an "empowering" process when actors recognized, reciprocated, and started trusting among each other. Lastly, there was a "strengthening" process measured by the betweenness centralization (overall integration towards actors playing parts of a 'broker'). It was strengthening because there were actors who became mediators to help building mutual connections among pairs of other actors, thus adding support and endurance of the action structure within civil society domain.

The change process took place inside the civil society domain can also be summarized by observing the characteristic of tendencies along the diagonal line in Table 9.2*B* (highlighted in yellow color). The growth dynamics of relationships among civil society actors went from "reluctant estrangement" before the earthquake, to "recognition-trust building", and eventually toward a state of constructing the "strength of resilience".

Table 9.2.1. Degree Measurements Illustrating the Development of Civil Society Structural Resilience

	Local				Global	
	Out-degree Centralization **Emerging**		In-degree Centralization **Empowering**		Betweenness Centralization **Strengthening**	
	Comm.	Colla.	Comm.	Colla.	Comm.	Colla.
t1	25.244%	6.212%	6.862%	6.948%	2.71%	0.19%
t2	94.518%	16.362%	21.727%	16.362%	13.03%	5.53%
t3	92.903%	22.606%	18.642%	17.460%	15.14%	7.59%

Note: Comm.: Communication Network (motivational network); Colla.: Collaboration Network (behavioral commitment network)

Table 9.2.2. Conceptual Summary the Construction of Civil Society Structural Resilience

	Emerging structuration (out-degree centralization)	**Empowering** (in-degree centralization)	**Strengthening** (betweenness centralization)
t1	Reluctant estrangement	Ignorant	Self-sufficiency
t2	Action-agency freedom realized	Recognition-trust building	Intermediary role adoption
t3	Commitment actualization	Commitment actualization	Strength for resilience

As a result, the strengthening of the structural resilience also worked to spur further solidarity within the domain of civil society. Represented graphically, the blue arrows in figure 9.5 represented a process of institutionalization with each stage normally working in a sequential order over time. In the Chinese disaster recovery case, the process from persistence of agency action to sustenance was reinforced by the emergence of behavioral commitment networks and the concentration of betweenness role adoption. This force was represented by the red arrow in figure 9.5. The existence of such a dynamic, I would like to argue, created the primary pre-condition for the institutionalization inside the civil society domain.

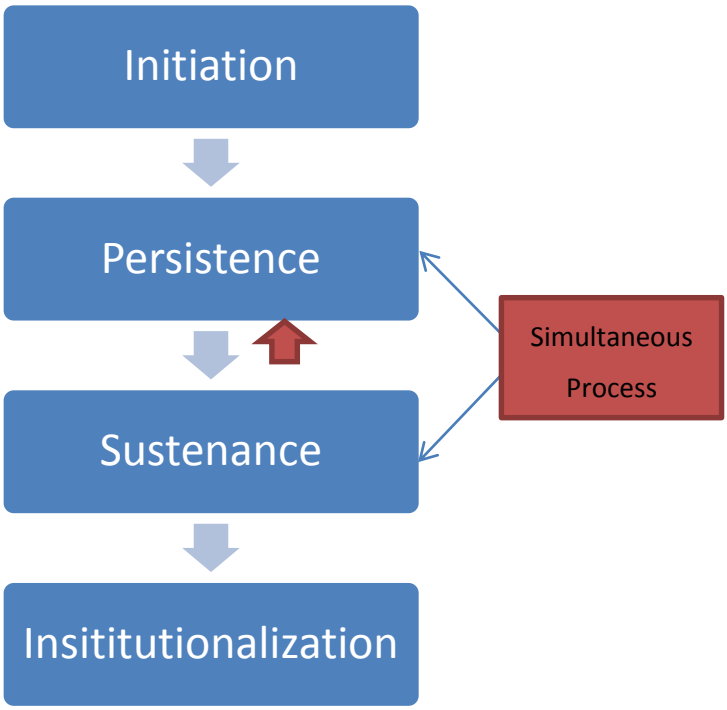


Figure 9.5. Strengthening Mechanism of Civil Society Institutions

One characteristic of this pre-condition was that the common interpretation of how we understood "power" as being able to dominate others and imposing constraints on others needed to be held very loosely when looking from the perspective of civil society. The actors in this context considered their experience less about gaining favorable positions but more about support, encouragement, and a sense of shared achievements. And these in turn were manifested in the agency actions that led to the simultaneous process of persistence and sustenance of the resilient social structure.

Self-Evolution

Table 9.3 illustrates the evolutionary tendencies for civil society actors to build increasingly dense local neighborhoods for both communication and collaboration relationships.

Table 9.3. Communication and Collaboration Network Clustering Activities Before and After the Earthquake

	Weighted overall graph clustering coefficient		Overall Density	
	Communication	Collaboration	Communication	Collaboration
t1	0.129	0.066	0.0122	0.0040
t2	0.139	0.084	0.0544	0.0127
t3	0.167	0.101	0.0613	0.0164

The increasing level of weighted clustering coefficients in comparison to the overall density for each period of time demonstrated a change process of the post-earthquake civil society domain towards higher intensity of camaraderie synergy among actors.

The existence of the dynamics of network evolution can be demonstrated by the evidences found from the network dynamic modeling analysis. The change process within the Chinese civil society started with the initiation of agency action among

group/organization actors. The period that brought forth the most significant structural changes to the civil society domain was the emergency response stage. The change was characterized by the actors' tendency to build reciprocal communication and collaboration ties with others that were of different institutional status, thus building up a nurturing foundation for the further development of newly emerged civil society actors. Those who were being reached out to by many others tended to be more attractive in creating themselves further communication and collaboration ties. The tendency for commitment was activated by the extra propensity for the active ones to build more collaborative connections. At the same time, the different roles for civil society actors to communicate with each other also started to emerge. Thus, the emergency response period set the primary stage for the persistence of action and the support for the maintenance of capability development of a resilient Chinese civil society.

Patterns of evolution from the long term recovery stage demonstrated that the changes initiated by the agency actions were being sustained and reinforced by continued tendency for reciprocation preferences among civil society actors with differential institutional (registration) status. The established capability functionings available for actors to communicate and collaborate with each other were being further sustained by their proactivity in continued creation of triadic relationships. Most importantly, the

driver undergirded such proactivity was the newly established non-registered civil society actors. This demonstrated that the resilient structure that emerged through the crisis was being restored over the long term and its tendency to evolve over time was propelled by the sustained agency actions among the emerging actors inside the civil society domain.

One distinguishing feature of the emergence and evolution processes of the capability formation inside civil society after the earthquake was that it was the result of significant social structure re-construction. The communication structure immediately after the disaster was not the result of any previously existing commitments but arose from the active creation of new social opportunities. Civil society actors consciously chose to build the system anew in accordance with a new way of being. Over time, the "fruits" of the newly arranged social arrangements—the emerging resilient structure—was being maintained. The source of sustenance first came from the direct cross-enhancement of communication and collaboration networks. Such co-evolution also became the mediating mechanism for the independent development of the communication and collaboration relationships. In other words, the creation and maintenance of each network environments representing the institutional change process was mediated by the between-network dynamics. The bonding process among civil society actors continued to be reinforced beyond the initial structural change. At this

stage of development, the civil society domain has self-generated a kind of change dynamics that could prompt its own "evolution", thus demonstrated signs of endurance and transformation[237].

Civil Society, State, and the Market

And of course, the evolution process did not happen apart from the civil society actors' initiatives towards the state and the market domains. There was an increasing awareness and recognition of the importance of the state and market system functions as perceived by the civil society actors. As groups and organizations acting inside the civil society domain gradually recognized their desired functionings as independent agents in performing response and recovery tasks complementing the state and the market system, they began to forge more commitment-oriented ties towards actors inside the other two domains. The unique feature for such cross-sector initiatives was primarily based on civil society actors' perceptions in what constituted as a Chinese "model" of coping and adapting to catastrophic disasters. And such a model incorporated the development of inter-sector relationships at the institutional commitment level.

[237] Please see Appendix 9.2 for the effects of the types of activities on network evolution.

Using the results from the N-clan analysis examining the formation of the clique-like groupings in collaboration networks, I found that before the earthquake, the state and the market domains were joined together as being "close" because they share membership in three of the 2-clan groupings. But the actions for sub-structure formation on the part of civil society actor were not strong enough to get them attached to the state-market joint domain. Immediately following the disaster event however, civil society actors formed closer collaborative relationships with each of the state and the market domains. The arrow signs in figures 5.2.17, 5.2.18, and 5.2.19 represented the attachment sequences formed by the actions of the civil society actors. During the recovery stage, the three domains eventually joined together as being close in sharing sub-structure memberships. During this process of strength formation, the perceptions of an active role that drove the actor behaviors towards the state and market were experienced by all kinds of civil society actors regardless of the institutional formality status.

Civil Society and State (Post-Wenchuan Earthquake)

As part of the findings in this study, the action domain of the Chinese civil society was initiated within two kinds of boundaries. Shown in figure 9.6 below, the first domain

of action was initiated at the local community level with the meaning and functioning of the civil society understood not only co-existing with the state but also distilled inside the boundary of the state at the local Party level[238]. Findings at the community level illustrated a perceived integration of purpose-definition and meaning-making with Party memberships of the participants representing the civil society group actor. At the village community level, an overlapping functioning across the civil society group and the local Party branch was self-identified.

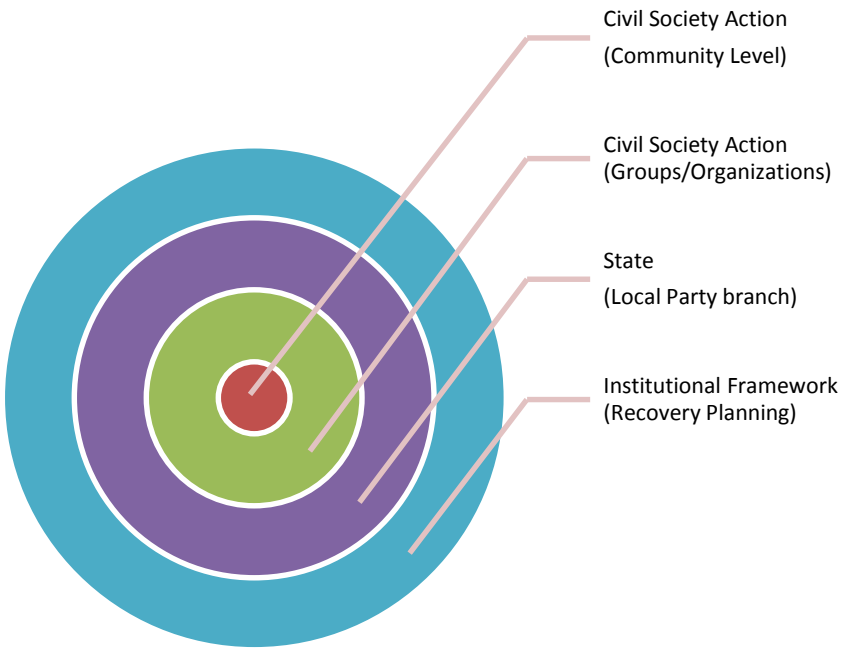


Figure 9.6. Post-Wenchuan Earthquake Chinese Civil Society and the State

[238] See Appendix 9.3 for further explanation regarding the case findings of civil society action at the community level.

The agency action and its sustenance initiated by the newly emerged grassroots groups and organizations after the disaster pushed the boundary of the action domain outward. At the same time the civil society was trying to discover its identity in the re-constructed social condition while trying to be an independent decision-making entity, the perception of the state was not one of complete detachment from the functioning of civil society domain. These functioning conditions included an institutional framework mediated by the state in the form of dealing with times of uncertainty and change. This type of relationship between the state and civil society can be compared to Habermas' (1989) "schema of social realm" (30) illustrated in Table 9.4. In his model depicting the public sphere and the private realm, the line between the state and society is "fundamental", which renders a clear separation of the sphere where civil society functions and the sphere where the state resides. The actions of civil society after the Wenchuan earthquake showed the possibility of an alternative realm within which the state and society functions. In the Chinese context, the public sphere where civil society actors took their actions did evolve over time not with the state on the other side as a separated division, but embedded itself in the institutional boundaries of the state.

Table 9.4. Habermas' (1989) Schema of Social Realms

Private Realm		Sphere of Public Authority
Civil society (realm of commodity exchange and social labor)	**Public sphere** in the political realm Public sphere in the world of letters (clubs, press)	State (realm of the "police")
Conjugal family's internal space (bourgeois intellectuals)	(market of culture products) "Town"	Court (courtly-noble society)

(Source: Habermas, 1989, p30)

Civil Society Institutions: Role Formation and Diversification

At this stage of civil society development after the Wenchuan earthquake, differing roles and positions started to emerge as a result of civil society agency actions. For the communication networks, actors engaged in few structurally equivalent roles before the disaster event (see figure 8.11) with "gatherers" and "activators" being the main positions being occupied. Some actors were also isolated from the information exchange structure. Shortly after the earthquake, there was a general increase in the diversification of structurally equivalent positions (see figure 8.12). Within each position, actors exhibit similar communication affiliation patterns with others. The state and the market aggregate actors were perceived to be occupying similar roles. This pattern of diversification remained through the disaster recovery period (see figure 8.13). Channels

of communication remained open among actors occupying different positions, although with slightly less mutual exchange outreaches.

For the collaboration network, similar dynamics in role diversification were found by comparing before (see figure 8.14) and shortly after the earthquake (see figure 8.15). The state and the market domains were tightly embedded among collaboration activators, meaning the civil society domain was actively engaging the two other aggregate actors for emergency response collaborative efforts. After the initial actions of seeking project collaboration partners shortly after the disaster event, more civil society actors were being recognized and reached to as collaborators (see figure 8.16). This demonstrated signs of changes inside the civil society domain moving from sustenance to institutionalization[239].

An Emerging Theoretical Framework for Civil Society Action in Times of Crisis

Resilience Formation: Chinese Civil Society in Times of Crisis

In general, the findings of this study demonstrated the change process of the communication and collaboration structural environments after the 2008 Wenchuan

[239] See Appendix 9.4 for further elaborations regarding the experience of actor NGOLF.

Earthquake. This process was characterized by the formation of what I would call a "resilient social structure" activated and reinforced by the civil society actors defined at the level of group and organizations. The construction of such social resiliency can be explained through the natural growth process of a tree illustrated in figure 9.7.

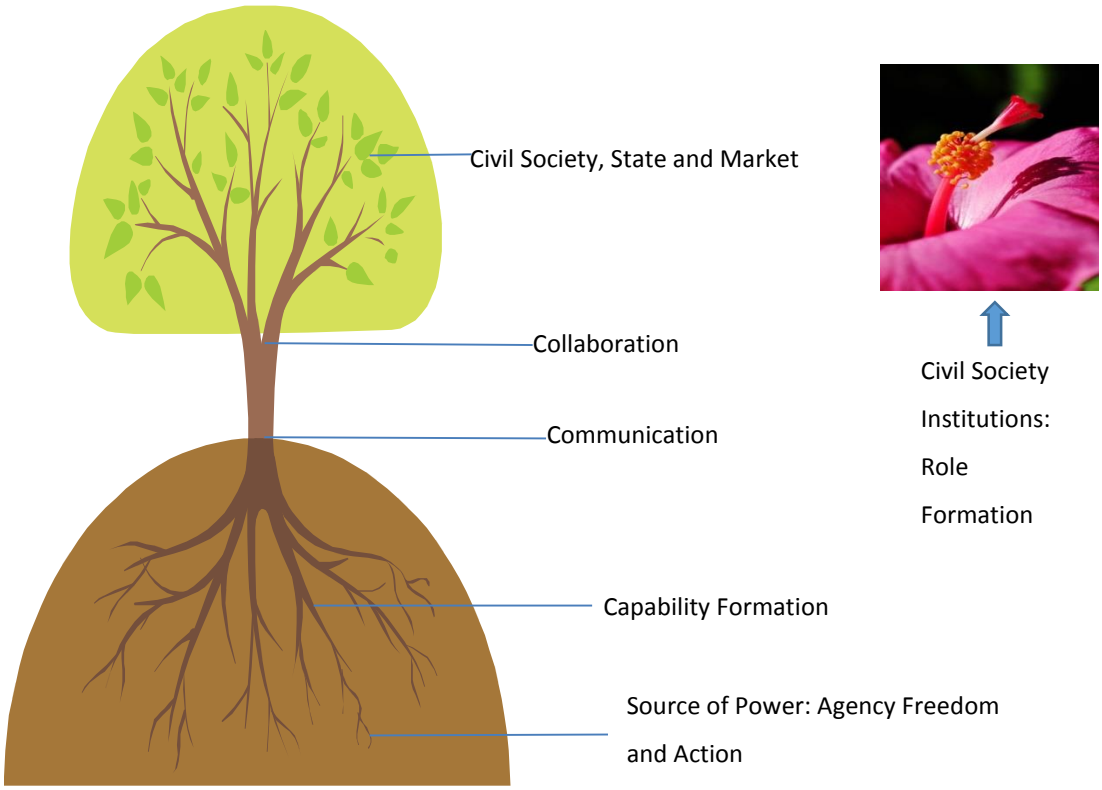


Figure 9.7. Resilience Formation: Chinese Civil Society in Times of Crisis

The agency action initiated by the civil society actors upon facing the disaster event provided the foundational source of emergence. Once the power for growth took its root in a nurturing environment, the development process of communication and collaboration network structures started to emerge. This can be represented by the

formation of capability functionings in terms of the available ways actors embedded themselves inside the communication and collaboration network environments. As new ways of relating were developed through the structural reconstruction of how actors communicate and collaborate with each other, the growth of the social structure was enhanced by the evolutionary and co-evolution dynamics of the two types of the networks working beyond the emergency response stage into the long term recovery. As actors engaged themselves into more commitment-oriented behaviors, the capability functioning of the civil society domain expanded just as a tree started to yield its branches and leaves (represented in figure 9.7). This development stage was characterized by the capability of civil society actors reaching out toward actors inside the state and the market domains. Just as the yield of tree leaves cannot happen without the existence of strong enough foundation, the cross-sector action dynamics could not be separated from the maintenance of a self-evolving civil society whose drivers of growth originated from within rather than dependent on the external factors. Eventually, the growth of Chinese civil society domain after the earthquake reached a point where actors were able to seek independent role formation, thus showing a trend toward institutionalization beyond the disaster recovery stage. The complete developmental process of the Chinese civil society domain can be represented by figure 9.7.

The key factor of this change process could be traced back to the agency freedom activated by the civil society actors in times of the crisis. Such freedom reflected in agency actions and the emergence of increasing possibilities of various capability functionings in relationship-building was essentially self-realized and enacted inside the civil society domain. The meaning of resilience in this study was found to be inevitably "social" from the emergence stage to the maintenance stage. The focus of the social aspect of resilience was grounded in a civil society emerged at the group/organization level. This type of social resilience was revealed through stages of social processes that were inherently dynamic. This is different from the social capital perspective, which emphasizes on the resources already in place for society to cope with crisis at one point of time. In this study, I argue that actions of relationship-building as change agents cannot be separated from understanding resilience. A dynamic perspective is not only important to be incorporated in tracing the emergence and growth process of social resilience, the analysis procedures of this study demonstrated that it can also be evaluated through observable measures for possible policy implementations.

The development of a resilient social structure as a growth process illustrated in figure 9.7 can thus be summarized into a preliminary conceptual framework connecting

the themes thus found in my study (See figure 9.8). It elaborates on the role of civil society in building resilient social structures as a coping and adapting mechanism when facing extreme uncertainties and changes. The flow of the themes was developed to understand the Chinese civil society in action through times of the 2008 Wenchuan Earthquake. The process starts by agency action on the part of civil society actors as the source of power to reconstruct the social structural conditions despite of the distresses brought by the happening of the disaster. With persistent actions in building up the capability functionings through alternative ways of communicating and collaborating with each other, comes the commitment and institutional change stage. Civil society actors become more engaged when transitioning to the long-term social recovery stage and started seeking an institutional environment that can strengthen the bonds established short term after the disaster event. The sustenance of moving on to this stage comes from the actors' recognition and the enactment of the interdependency upon each other inside the civil society domain as well as with the state and the market actors. Finally, a prototype of a resilient social structure starts to emerge and develop as actors' roles are formed through a set of coping and adaptation mechanisms to learn to communicate and collaboration with others. The system will show signs of being transformed when the initial structural changes are found to be governed by a set of rules and patterns as the

new social arrangements are going through an institutionalization process. Because the entire change process is motivated by the civil society actors' inner agency drive to bring about action, the continued growth and strengthening of such a social resilience structure is dependent on the collective awareness of actors recognizing each other's roles and positions and consciously act in expanding the overall capacity of the structure.

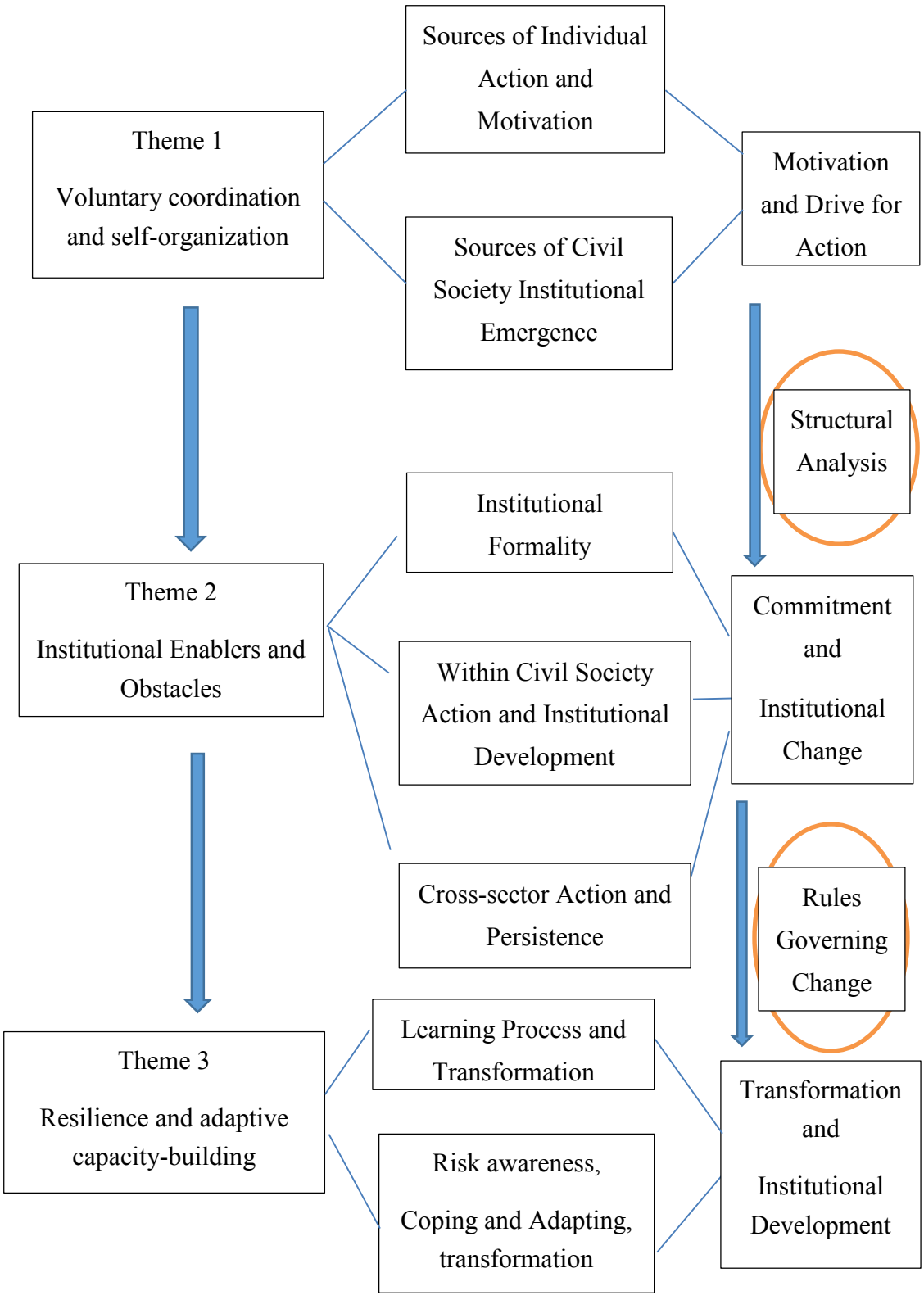


Figure 9.8. A Conceptual Framework for Civil Society Action in Times of Crisis

Amartya Sen's Capability Approach Revisited

In Sen's (1992) conceptual development of agency freedom, his arguments were based on the reflections of the following positions. One was the active role of individuals in forming the agency to bring about achievements one cherishes and values. Secondly, he used the capability approach to develop an instrument to reflect the agency freedom that can enable one to choose among alternative functionings, or in other words, the capability set. Thirdly, he recognized a limitation in such an approach lies in the fact that the capability set is not directly observable or "has to be constructed on the basis of presumptions" (52).

By investigating agency actions at the group/organization level in this study, I traced the sources and characteristics of agency freedom by defining the capability functionings as a set of alternatives (realized or unrealized) that an agent can choose to build or receive various types of connection toward or from others. Agency freedom can be a set of relational possibilities in addition to be understood as a set of pre-defined ways of livings. In the case of the former, I was able to demonstrate the visibility and the direct measurability of a capability set initiated by the agency of group/organization actors. With a relational perspective, the freedom concept also possesses a dynamic nature as agency actions are enabled. One move initiated from one actor can alter the relationship

environment of not only itself but also the relationship structure as a whole. As a result, the characteristics and the extent of agency freedom can have their interdependent and dynamic natures mapped out and revealed when understanding the concept from a relational point of view, thus adding up to an alternative perspective of the political conception of justice.

Implications of the Study for Planning and Policy-making

First of all, the study demonstrated the importance of building various communication and information sharing platforms for these civil society actors to have the opportunities to interact with each other on a consistent basis, particularly from the perspective of disaster mitigation and preparedness. The Wenchuan earthquake did raise the awareness of emerging civil society actors to take the active role of facilitators in constructing different kinds of platforms. What the government can do in this respect, is to provide a supportive institutional environment that nurtures such interactive dynamics so that the emerging communicative and collaborative relationships can be developed and enhanced. Building social "resilience" to prepare for future disasters and enhancing social capacity for risk management in general does not just depend on the actions of either civil society or the state alone, it also requires the conscious efforts on the state side to

contribute to the institutional conditions where actions inside the civil society domain can flourish over time.

Secondly, future planning policy-making can be more active in building the pre-condition for civil society capacity building in the Chinese case. Such condition incorporates the need for designing supportive social policies in guiding and enhancing the capabilities of civil society actors in managing themselves. At the same time, it also stipulates clarity for both the state and the civil society actors in understanding each of their own duties and responsibilities short-term and long-term after disasters. Thirdly, it is important for planning to emphasis on the "policy coordination" aspect in order to activate the correspondence of various branches inside the government for the development of grassroots NGOs. This is particularly pertinent to civil society actors' field of specialization. For example, the field activities of civil society actors can be greatly facilitated if attentions can be coordinated by the ministry of forestry, environmental protection, and tourism, etc.

Thirdly, differentiating the paces of network change occurring in the targeting structural processes is necessary in linking institutional change to policy implementation for disaster preparedness and mitigation purposes. This necessity can be exemplified in two consecutive stages of planning policy making and implementation. The first step is to

determine whether the policy aims to increase the efficiency of information flow or/and to facilitate collaboration formation across different types of actors. Once the characteristics of targeting institutional structure are set, the second step will involve using the relevant measures for each type of network environment to understand what exactly has been going on in the evolution process. For example, the higher amount of increase in reciprocity from before the earthquake to shortly after the earthquake for collaboration networks can infer that actors are not only at a stage of high level institutional-building activities but also of higher level motivation to commit in the field of disaster recovery. When more attention is paid to the social aspect of recovery during the long term stage, policy can be formulated to facilitate the opportunities and enhance the capabilities of civil society actors to be involved in the local communities that experienced weakened social support systems possibly as a result of the disaster event. The timing of each stage that pointed to more dramatic levels of change, such as the periods before and right after the earthquake, can also be informative in providing signals to policymakers in when to implement certain interventions for reaching the intended outcomes.

Overall, this study looked at a case of disaster recovery from an actor-oriented procedural perspective. Such an approach has two primary implications for planning

theory and practice. First of all, the changing relationships among the three domains of planning theory—civil society, the state, and the market system—has been a key focus of theoretical scholars in the field. It has also been argued that such a three-part relationship is far from static when taking into account the process of social change in different types of planning cultures (Habermas 1989; Arendt 1958) around the world. Then, the question that deserves attention is how do we actually examine the dynamics of their interactions manifested in one particular planning culture? And through what kind of process do the sources of such change come from? If rules that governing such processes can be found, can we provide a specific tool for planning practice to adopt an evolutionary perspective that engage social actors? By allowing the actors to participate and name their network partners, this research approaches these questions from the perspective of the civil society domain. The study results showed that the source of "agency freedom" (Sen, 1992) can be traced with its own governing rules over time. Secondly, what this means for planning policy and practice is that the social aspect of the planning process should no longer be a complete "black box" full of politics (Banerjee 2012) and has left planners without proper tools to approach societal aspect of social change as much as they wanted to. A social network perspective illustrated in this study could be one possible way for planners

to look into the “black box” and develop measures that can actually guide the society to better prepare for change and uncertainties in the future.

One point worth mentioning here is the recent trend in systems thinking towards planning. Some took a point of stand that if planners can put every stage of their decision-making process into graphs and flow diagrams, then such “explicit planning paradigm” (p3) can avoid the problems such as un-clarified reasoning and outcomes (Perdicoulis 2010). An inherent assumption of this approach is that all the aspects of the planning process, including social and politics factors, can be perceived with technical clarity. This study challenged such assumptions by directly looking into the institutional sides of these “enemies of the systems” approach (Banerjee, 2012). And one conclusion that can be drawn from this study is that if planning actually allows the agency of the society to fully express itself in a "systems" way and be willing to see how the process reveal itself, until then, the perceived "enemies", that Planning Theory is trying to "adapt" to (Banerjee 2012, 2), can be our "friends" someday.

In relation to the institutional aspect of the theory, this research study provided a dynamic actor-oriented approach to the way we think about the interactions of the state, the market, and the civil society. The uniqueness of it derives from revealing the bottom-up perspective of the civil society actors. Also, the processes of how meanings are

actively constructed by actors and how their agency in turn being influenced by the perceived social environment, were examined and made explicit through network mapping techniques. This way, further depiction of the rules governing processes of the source of social change is made possible. A network perspective illustrated in this study can provide planners with a tool to engage social actors and develop measures that can actually guide the society to better prepare for change and uncertainties in the future. This is particularly relevant in planning for resilience and sustainability as they all engage processes that are future-oriented in the midst of social change.

The research also sheds light to public policy-making related to cross-sector collaboration and governance taking into consideration of cultural context and social change. This study focused on the social group and NGO communication and collaboration networks and their perceived connections to the state and the market sectors. Part of the results showed that there were certain degree of cross-dependencies between the communication ties and the collaboration ties over time. This can be a valuable lesson for policy-makers to refer to the factors that determine the conditions of collaboration formation across sectors and further design participatory initiatives that effectively engage the civil society actors for their sustained involvement in the governance networks.

In a nutshell, planning and policy-making are embedded within institutions, be it rules, norms, or cultural practices, which have inevitably become part of our daily lives. If the goal for planning is to make certain kind of social change toward social justice ends, whether it is within the growing concerns of sustainability and resilience-building, the origin of institutions, their formation process and their change, particularly at the level of groups, organizations, and communities as actors of civil society domain, must become an integral part of the intellectual endeavor in order to look at the source of the making that change.

Limitations of the Study

First of all, in terms defining the boundary of the civil society domain in this study, the effects of the Communist Party membership on the grassroots group/organization actions was not being accounted for in this study. In other words, individuals as part of the civil society groups or organizations were not distinguished by their Party memberships when I traced the factors contributed to the emergence of Chinese civil society after the disaster. This was because the point of view I took in looking at agency actions inside civil society focused on the social groups and

organizations as the primary unit of analysis. I also sought to understand the origin and characteristics of their agency actions using an organizational relational perspective as my primary point of emphasis throughout the structural analysis. Doing so also allowed me to examine Sen's (1992) capability framework by focusing on the characteristics and extent of agency freedom rather than on the already accomplished achievements of individual actors, such as status and all kinds of titled or materialized possessions. Technically, I adopted the structural changes and their tendencies to represent network dynamics as the key to investigate the role of civil society in this research context. In the future, qualities such as Party memberships at the individual level can be set as a factor to be considered when examining the formation styles of each civil society group/organization actor.

Another lesson to be learned in network data collection procedures is the need for clear specification of what constitute an actor as a formal organization or an informal social group. In this case study, the "date of establishment", in certain incidences, was reported as the day the actors gained formal registration status. But discrepancies occurred when actors in this category still named communication partners even before the day of their official existence. This suggests that the original questionnaire can be improved by defining the establishment day as when participants in a group/organization

first came to Sichuan and started working collectively without having the registered status. This way, the data will be able to capture more nuanced connections among actors and make more accurate descriptions on the origin of actions. Another related factor is that the current study investigated three kinds of registration status: 1) registered with the ministry of civil affairs and sponsored by local government branch; 2) registered under the business category; 3) non-registered. Research findings revealed that the "non-registered" trait that was originally considered as a constant covariate can have a third possible variant toward registration without government sponsorship of activities aside from the two institutionalizing routes mentioned earlier. This type of fluidity of actor trait can be captured by defining it as changing covariates in future longitudinal network analysis and eventually examining it as a behavioral variable. This way, the specific coping and adaptation styles in terms of institutionalization patterns of the Chinese civil society can be represented and understood.

In this study, I attempted to approach the duality of structure and agency (Giddens 1998) through a perspective of looking at the actions and development of Chinese civil society actors after the Wenchuan earthquake in 2008. The uniqueness of this method is that it allows for explicit observations of the interactions of civil society actors over time and looks further into the future by understanding their experiences and developing

possible scenarios and dynamic models that specify the rules governing processes of the source of social change, and thus making a contribution to understand the process that agency freedom can be developed when institutions are generally understood as constraints on human behavior.

However, the application of a longitudinal network modeling technique to analyze and understand periods of disrupted behaviors as a result of natural disasters or other mass disruptions belongs to a relatively new research endeavor in the planning field, particularly from cross-cultural contexts. On the technical side of model-building, it has been a challenging task to test for the goodness-of-fit of the current models in RSiena. Further advancement to obtain more robust models to understand behavioral evolutions after crisis situations is needed. Secondly, in order to take into account of the time heterogeneity issue due to the dramatic changes in network parameters of interest at the emergency response period, I incorporated time-tests when implementing the comprehensive models for three-wave investigations. I also conducted a separate modeling estimation for emergency response and recovery periods. A constant dyadic covariate illustrating actors' recovery activities was included only in the models for recovery stage. Since these activities can subject to change over time, there is room for improving model specifications by looking at the activities as a changing behavior

variable throughout the three data collection points. This way, future models can examine both social selection and social influence in this kind of networks for improved results. It is then possible to investigate the co-evolution of two one-mode networks (communication and collaboration) with two-mode networks (changing activity choices) in the disaster recovery context. Few models have been developed to represent how social networks generate and being influenced by social behavioral environments over time (Snijders et al. 2012), let alone within the contexts of crisis and disasters. Thus, the longitudinal modeling-building process involved forward model selection process to avoid instability of the algorithm for better convergence. Due to the lack of theoretical lens developed to guide the process, there was a component of data-driven perspective throughout the selection of network structural effects to be included in the basic model. I utilized a combination of forward steps (adding effects) and backward steps (deleting effects) based on the results of significance tests throughout the procedures (Snijders et al. 2010). With the advancement of theoretical development in depicting the social structural and human behavioral changes in the contexts of disaster settings, there is room for the basic models to be improved while being informed by theories. This study builds a preliminary step for the possibility in carrying this line of research forward.

The qualitative study of this research is an in-depth investigation of the sources of emergence of civil society action and institutionalization process in the Chinese disaster recovery context. I included the experiences of central actors identified by the quantitative analysis. The cases being traced for thematic analysis did not constitute the entire set of actors in the original survey questionnaires. Such is partially due to the time constraints and the accessibility issues in the field. The conceptual framework is developed from the currently available narratives in the case of Chinese disaster recovery. Therefore, its explanatory power to other cultural contexts may be limited. But an improved framework may be reached by incorporating future cross-cultural studies by using similar mixed methods research approach.

Directions for Future Research

Near-Term: International Comparative Studies

My near term research plans involves drawing on cases internationally and develop a comparative framework to understand the institutional challenges and development in exploring concepts of risk, sustainability and resilience.

Two factors are worth noticing from an analytical point of view, future network longitudinal models especially pertaining to disaster-related dataset should be

investigated with great care when incorporating the time heterogeneity and goodness-of-fit factors throughout the model-building process. Future case studies implementing the structural analysis methods will be informative in improving model specification and selection. Cross-cultural qualitative studies of civil society in times of disasters, particularly in the contexts of developing countries are needed to build the theoretical understanding of social settings undergoing disrupted or transformative changes. And such endeavor can form the backdrop in modeling change from a forward-looking perspective and incorporated for policy-making. In this study, I treated the state and the market each as an aggregate actor with the primary purpose of focusing on the actions within the civil society domain. Future research can specify the particular government organizational actors at the central and the local levels, as well as the differing functions of the businesses involved in the disaster response and recovery processes. This way, the nuances of the interactions across the civil society, the state, and the market domains can be depicted.

From theoretical point of view, the international aspect grows out of my interest in doing comparative studies between U.S. and China. Of special importance has been the changes with the institutions of a public sphere in the civil society and their relationships with the "state apparatus" (Clark and Dear, 1984). Going back to Sen's capability

approach, one question to ask in this context is to what extent the state apparatus should be seen as the purveyor of opportunities for functioning, and therefore maximizing freedom. The reason that I am bringing this in is that China remains having a presence of a strong state as compared to the U.S. And the state's changing relationships with the civil society remains to be seen and investigated with future researches.

The knowledge in planning has drawn its outlooks from a significant number of the existing theories and traditions that have largely been formulated based on the experience of the West. Such has not only led to the difficulties to apply these theories to look at the social and cultural changes that China has been experiencing and in explaining any divergence or convergence that China and U.S. have gone through with respect to the institutional dimension of planning. Has there been something that the current theories missed out? Are they adequate enough to equip planning to face the challenges from an institutional perspective when thinking about the experiences of China and the U.S.? These are some of the background questions that serve as my research interests in international planning/comparative studies/globalization.

Mid-term: Health promotion and the role of planning for social resilience

As part of my mid-term research plan, I would like to incorporate the health promotion aspect of social development into investigating the role of planning in building resilience not just for times after catastrophic disasters but also its impact on behaviors at the inter-group and inter-organizational level. I would like to look further into the applications of social networks in constructing the role of planning in depicting "who", "what", and the "when" factors upon engaging civil society in managing risks and disasters in general.

Long-term: Planning for resilience and risk management

The concept of sustainability has been used or interpreted in various ways depending on the different angles in looking at the issue of sustainability. In the longer term, it is necessary to focus on the social aspect of construction of urban resilience, where "resilience" is defined as the "capacity to restructure, adapt, and adjust to situations of stress" (Berke, 2008). And urban resilience can be interpreted as the ability of societies not only to withstand uncertainties and risks to restore order but also the institutional structures and processes that prepare today's cities under unexpected shocks.

These shocks not only include the setting of natural disasters but also environmental uncertainty, severe environmental distress as those come from accumulated effects of climate change, and other unexpected events. The natural disasters (Hurricane Katrina, Asian Tsunami, and the Sichuan Earthquake) or other social disturbances (September 11) are dramatic examples that emphasizing the need for cities or urban systems to cope with risks and other unexpected challenges.

Such context provides a constructive background to investigate the institutional aspect of planning theory, particularly institutionalization and change. There are several reasons for such a claim. On the one hand, the importance of institutions has been argued to have their ability to reduce uncertainty, to make expectations more reliable, and increase our "ability to forecast, predict, and expect" and thus "make planning possible" (Verma 2007, 1). On the other hand, how are they to deal with change? Institutions of the state indeed matters in dramatic events, but are they important in the sense that they performed routines or they provide opportunities for human functioning and maximizing freedom? Does social order arise out of institutional routines or institutional change? And how does each contribute to the daily practices of risk management and collaborative governance for urban resilience? These are some of the questions I would want to tackle when linking theory to practice. Eventually, this line of research will inform planning

theory by looking at the development of civil society from an institutional capacity-building perspective.

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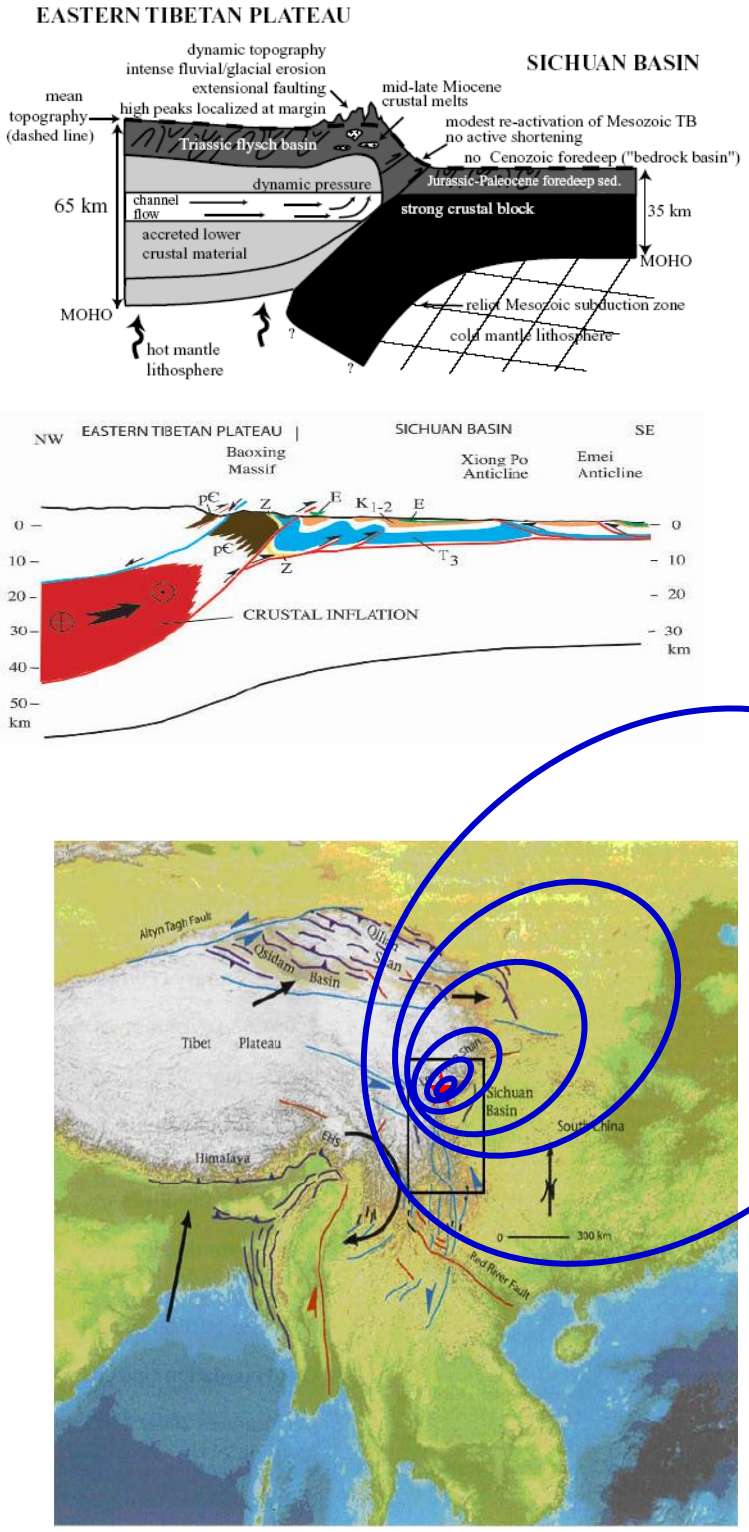
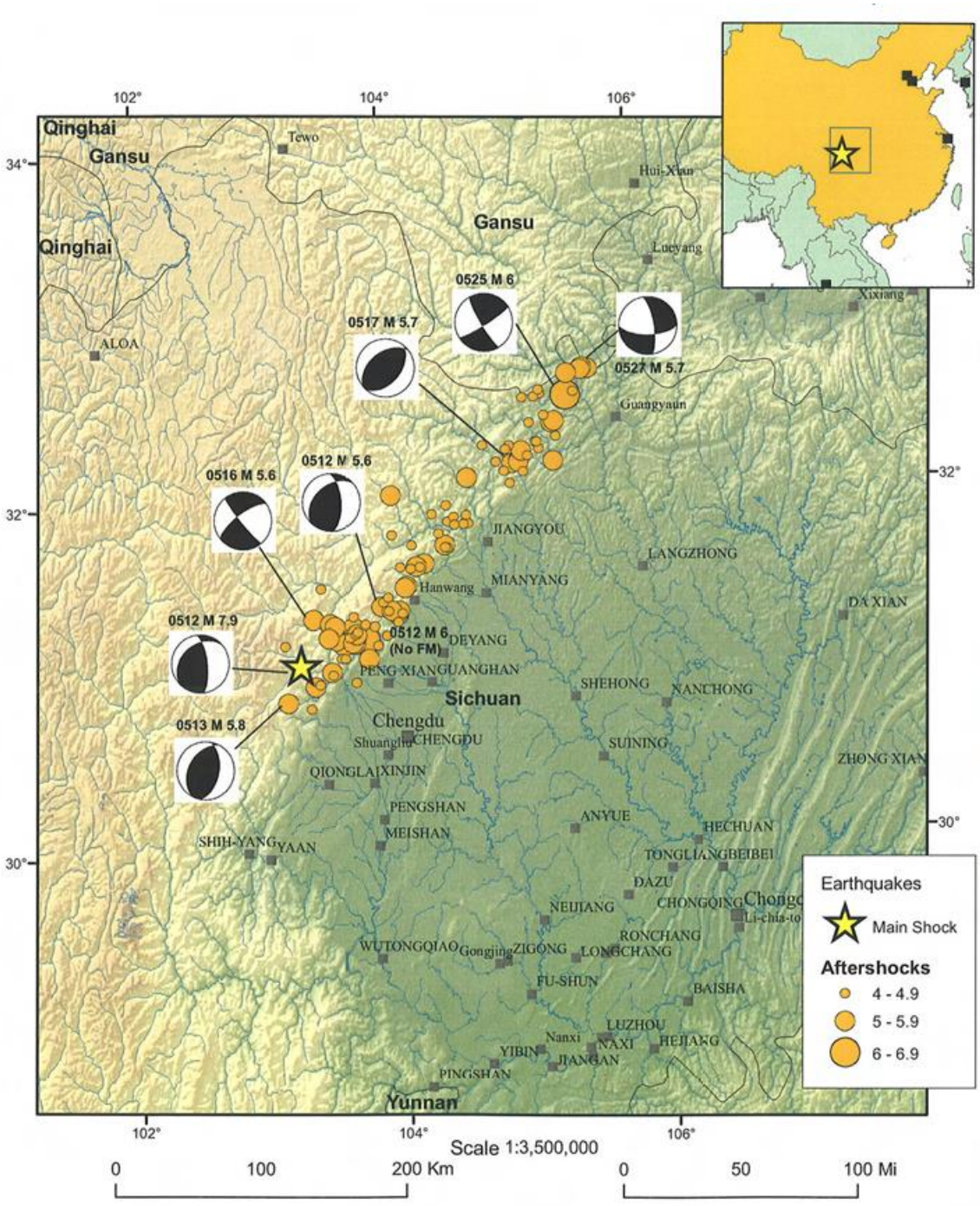
Appendix I. Chapter 1 Appendices

Map 1.1



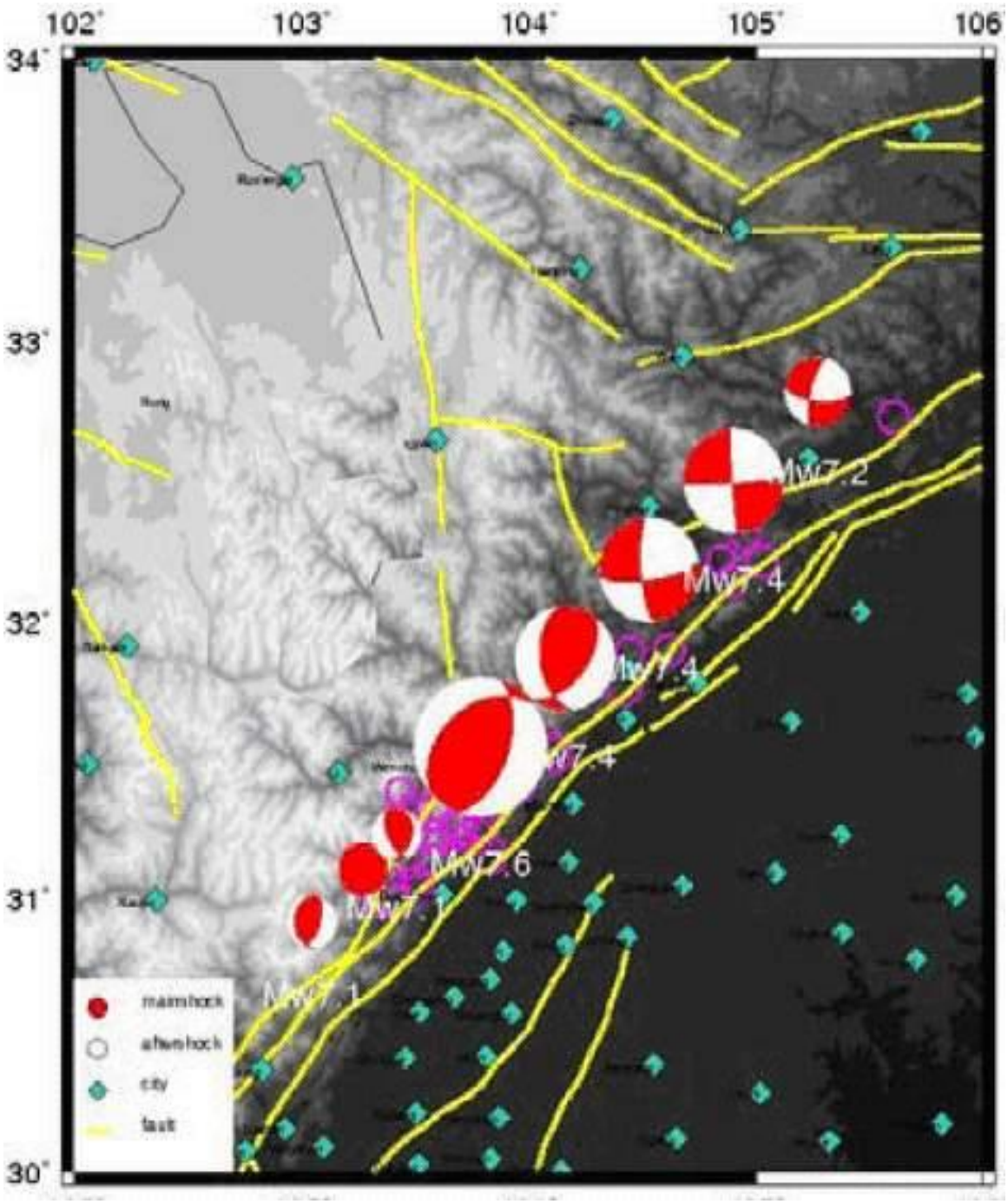
Source: Qu, 2010, China Emergency Search and Rescue Center

Map 1.2



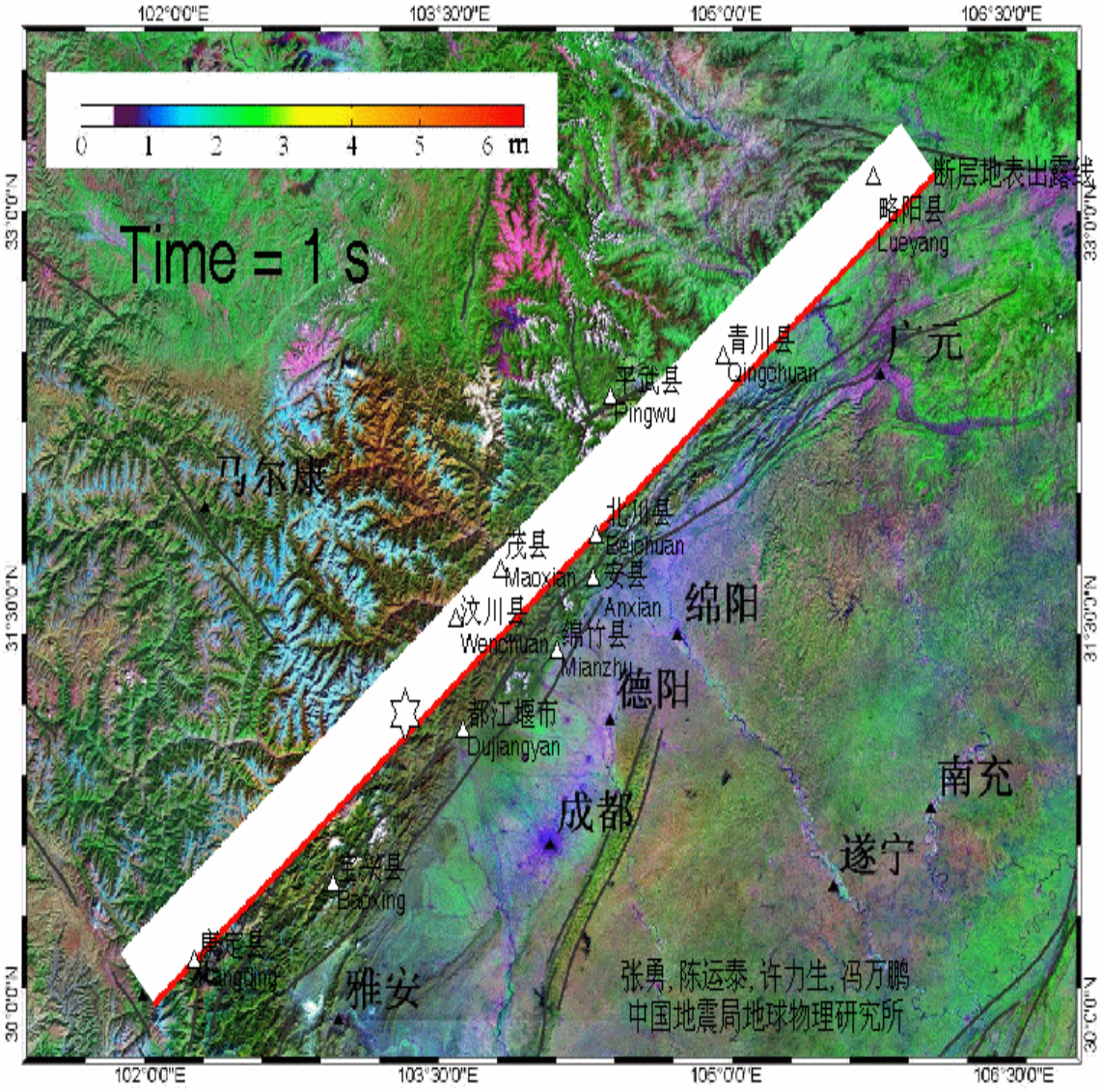
Source: EERI Special Report, 2008

Map 1.3



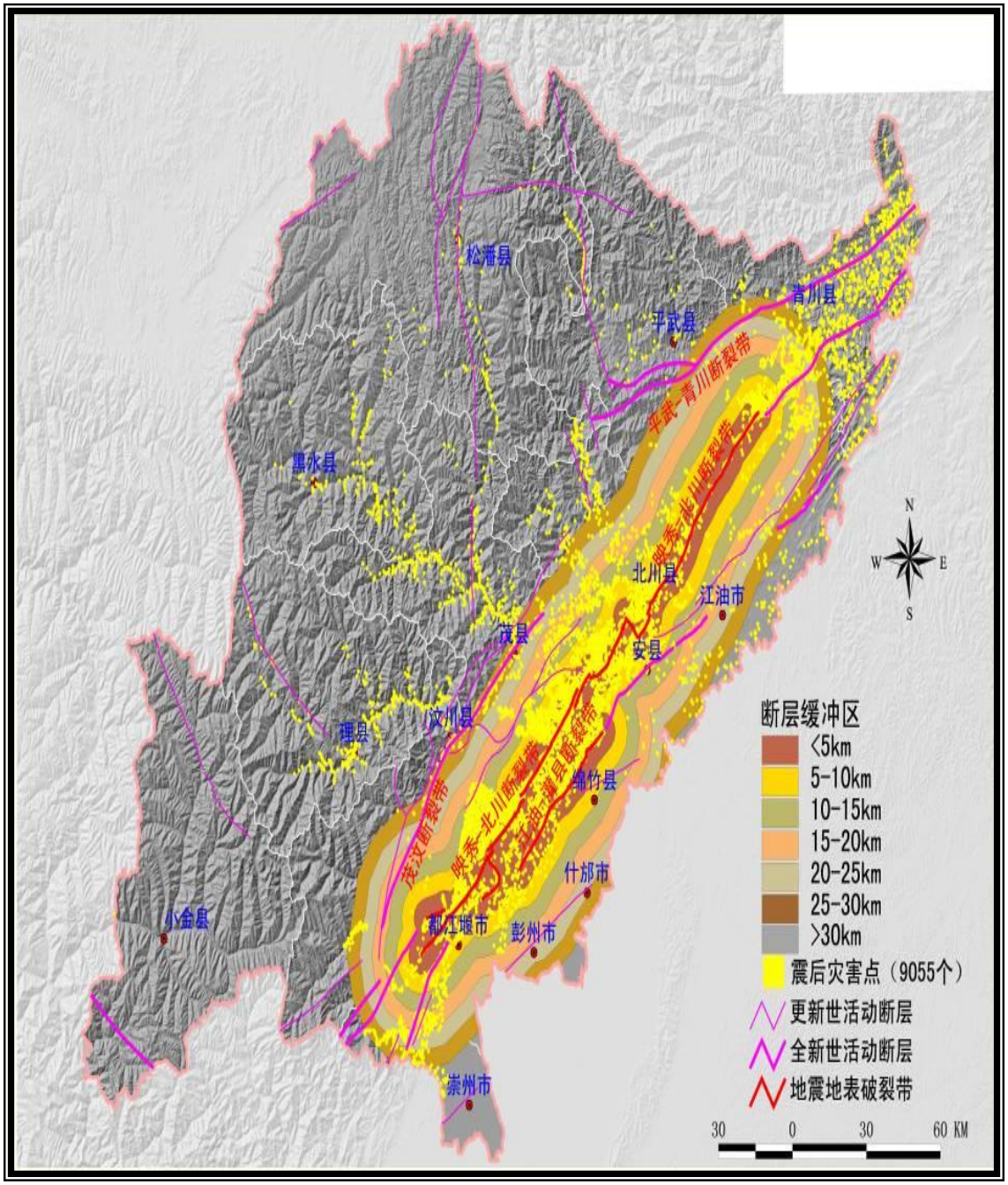
Source: Qu, 2010, China Emergency Search and Rescue Center

Map 1.4



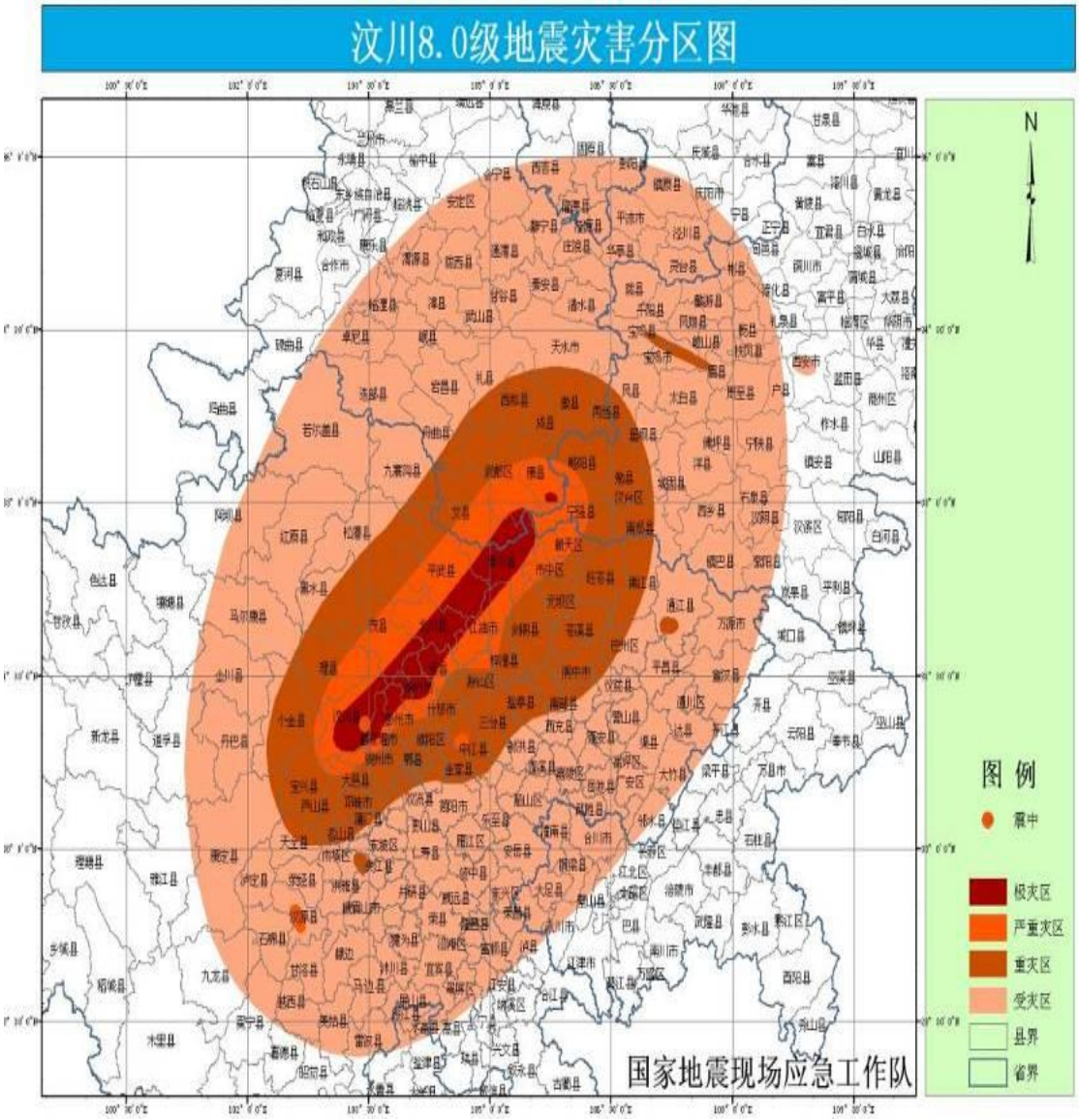
Source: Qu, 2010, China Emergency Search and Rescue Center

Map 1.5



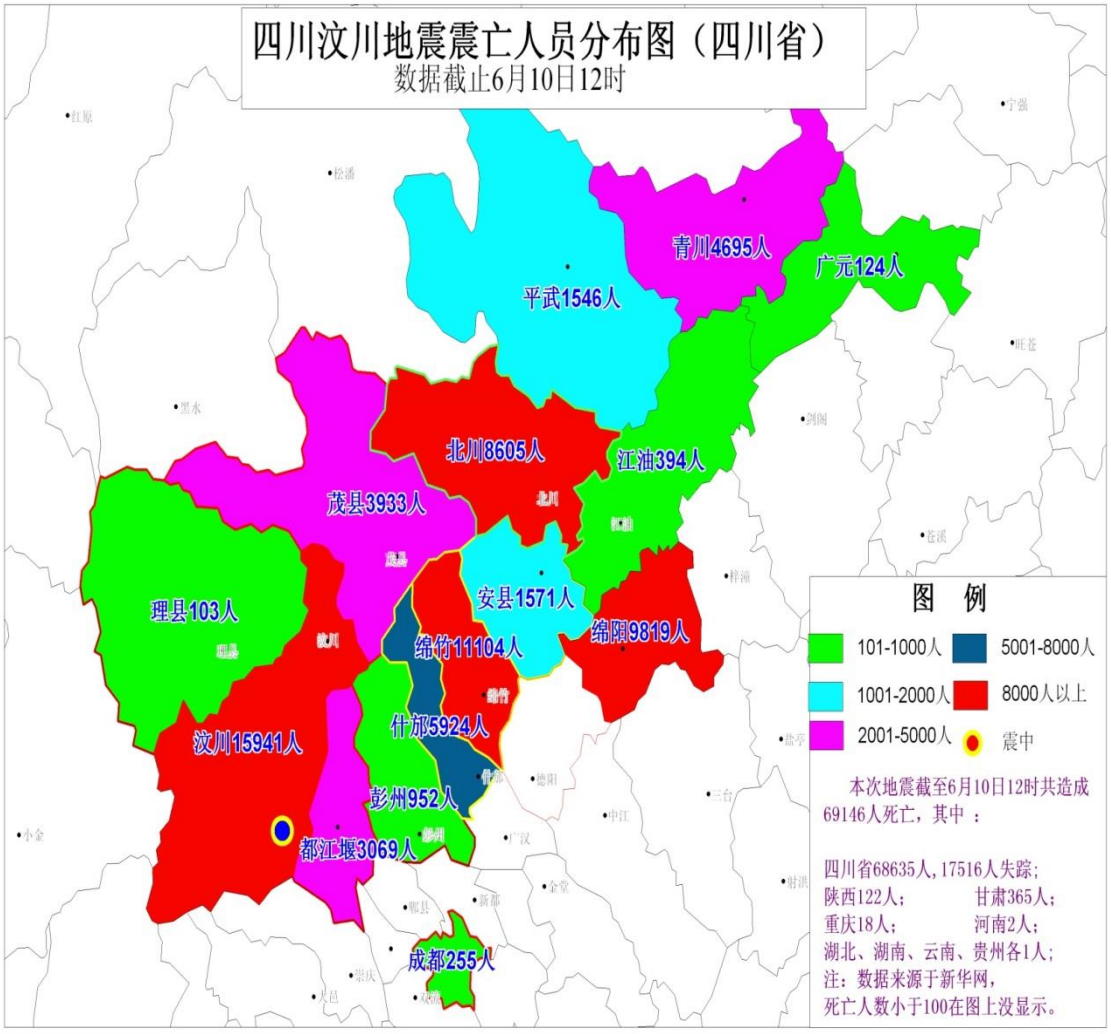
Source: Qu, 2010, China Emergency Search and Rescue Center

Map 1.6



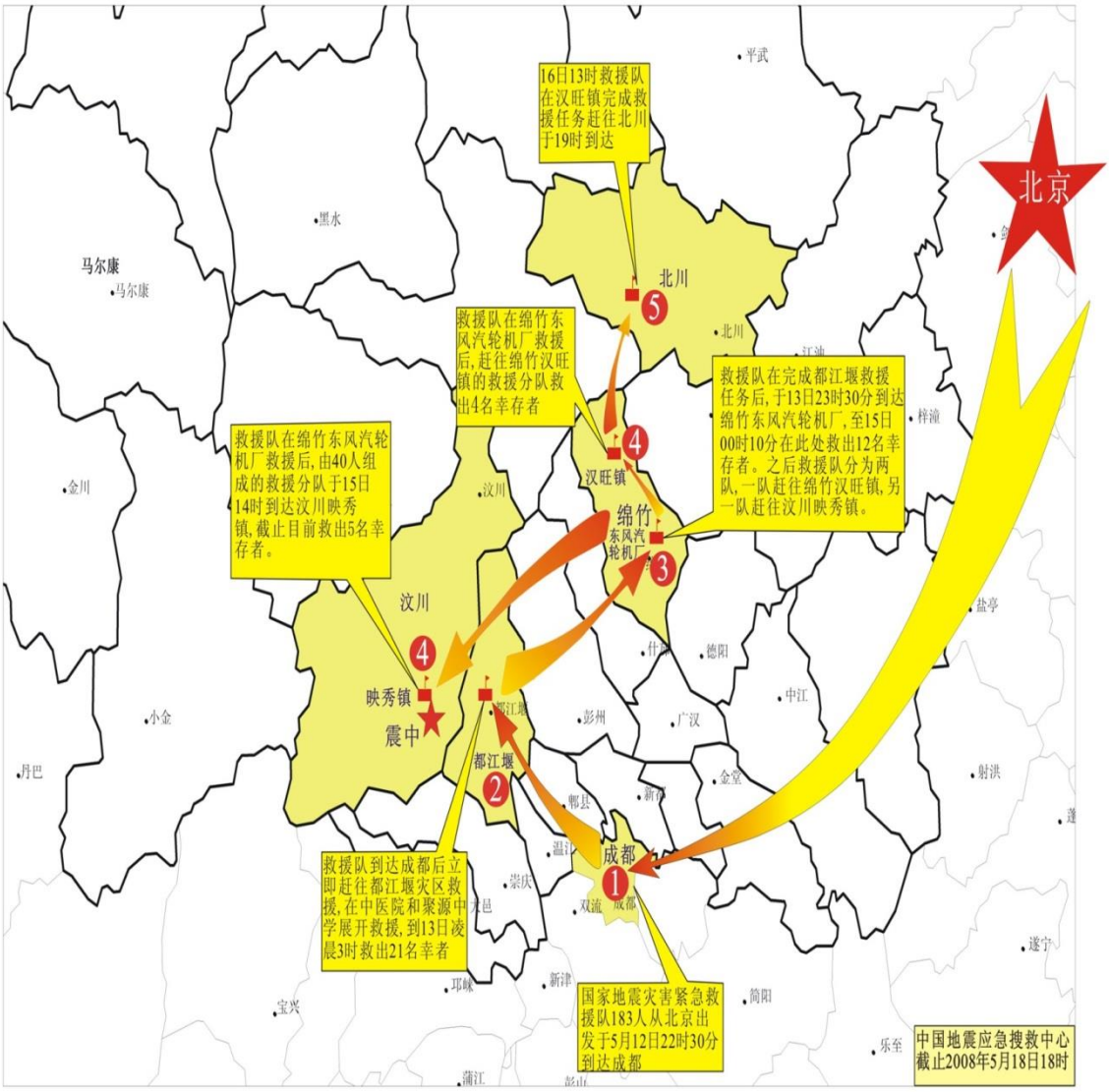
Source: Qu, 2010, China Emergency Search and Rescue Center

Map 1.7



Source: Qu, 2010, China Emergency Search and Rescue Center

Map 1.8



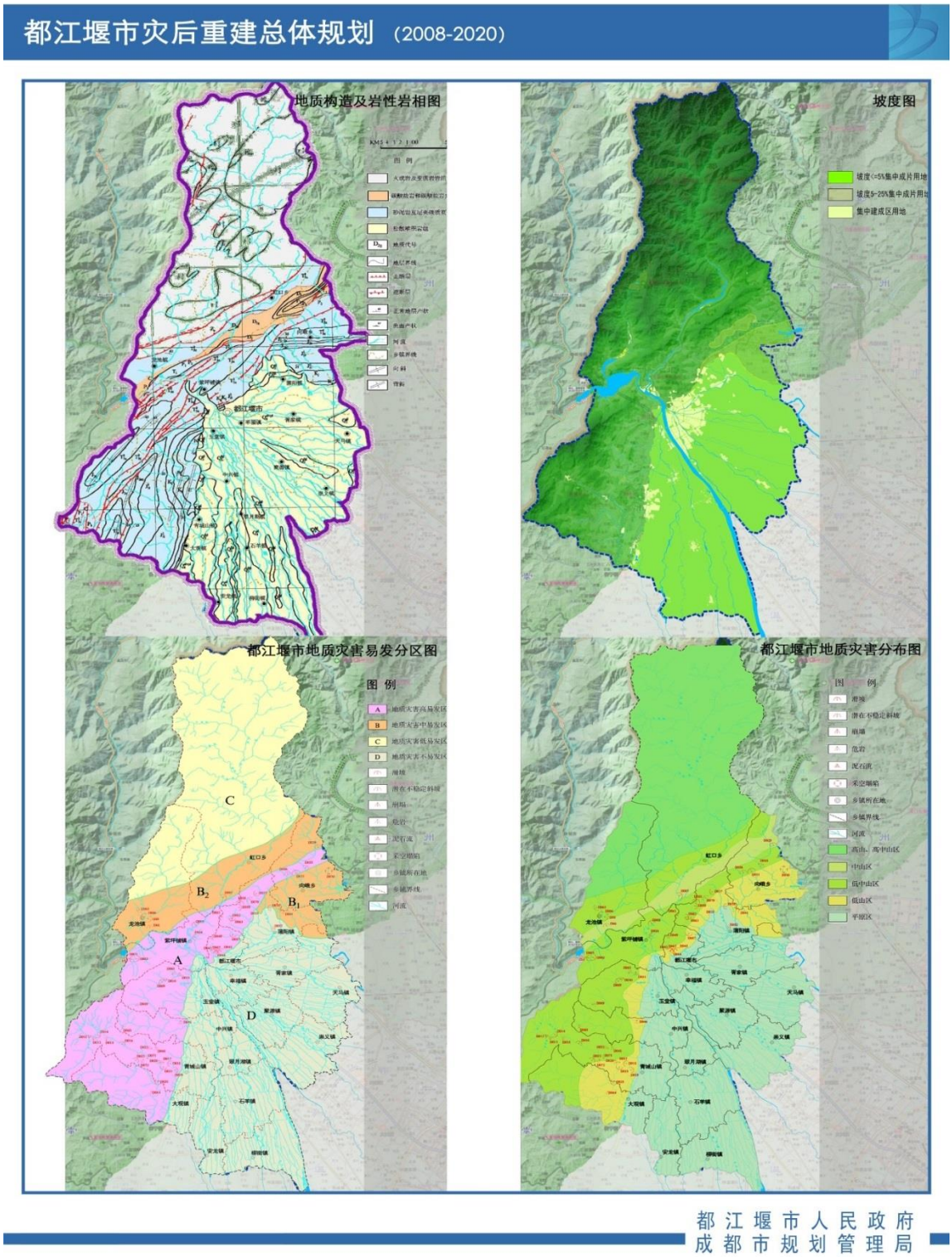
(Source: Qu, 2010, China Emergency Search and Rescue Center)

Dujianyan Wenchuan Earthquake Recovery General Plan (2008-2020)

Map 1.9 (a)

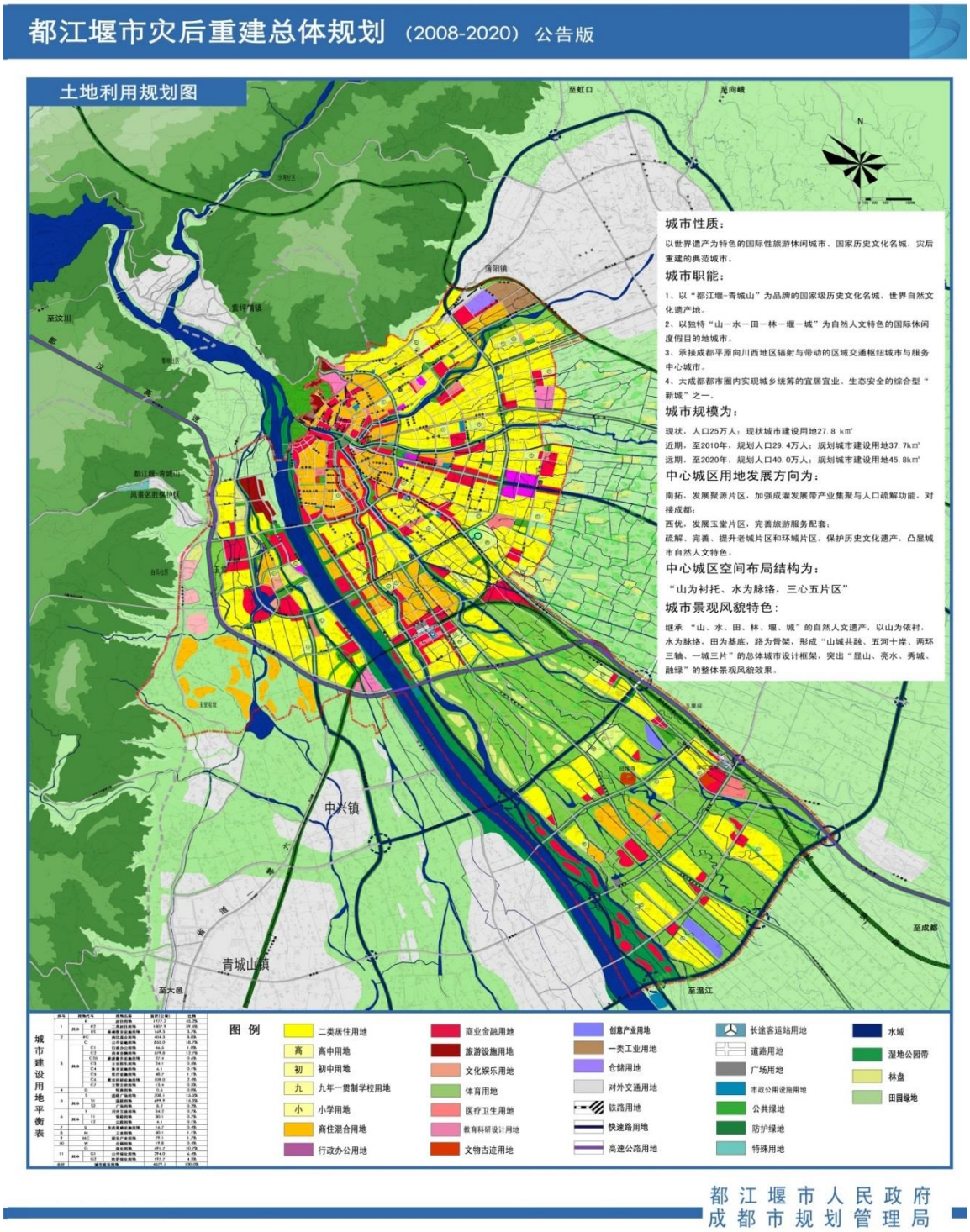
(Source: Dujiangyan Planning Administration, 2011)

Map 1.9 (b)



(Source: Dujiangyan Planning Administration, 2011)

Map 1.9 (c)



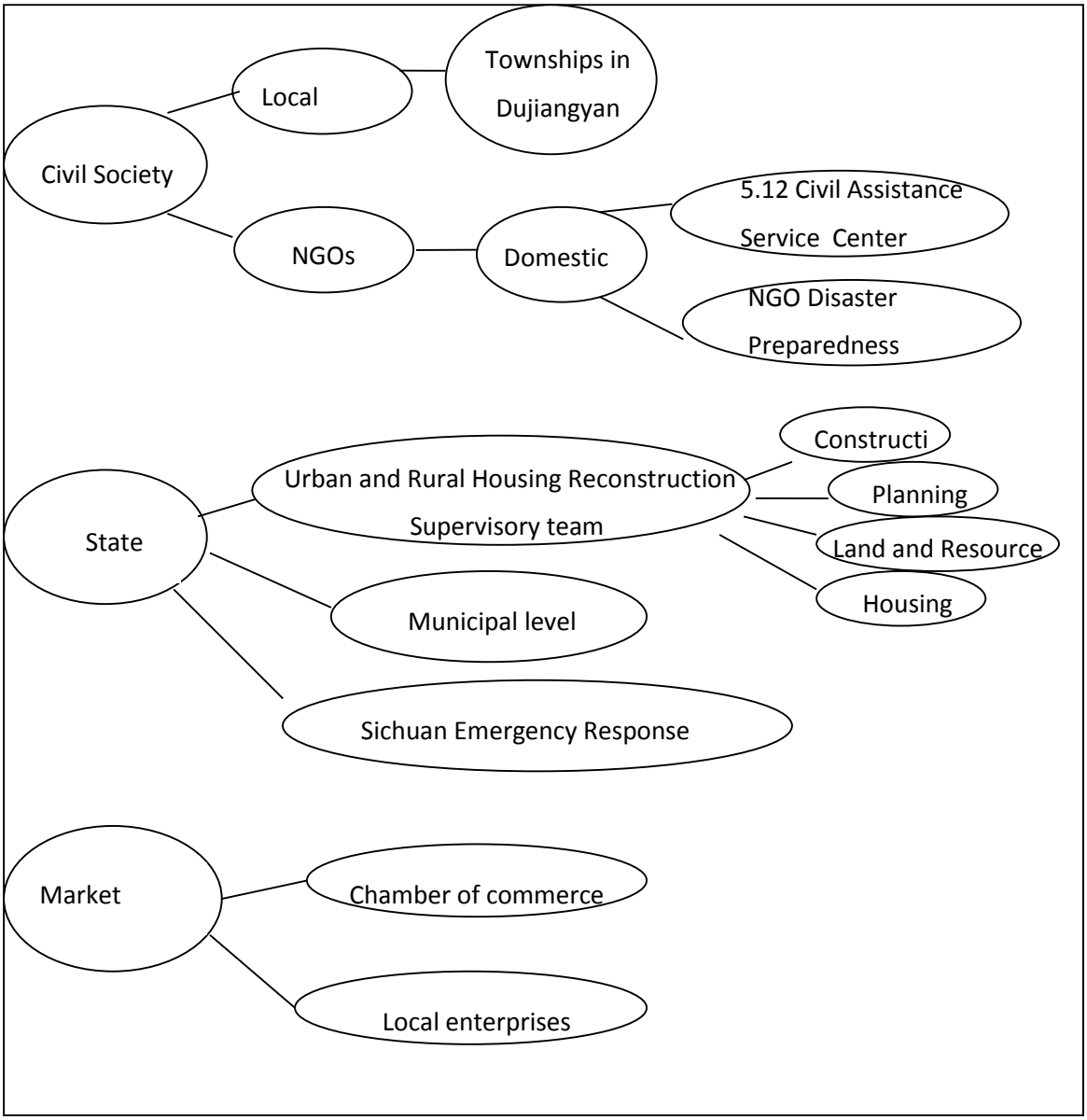
(Source: Dujiangyan Planning Administration, 2011)

Map 1.9 (d)

(Source: Dujiangyan Planning Administration, 2011)

Appendix II. Chapter 3 Appendices

Appendix 3.1
Original Fieldwork Study Plan



Appendix 3.2

Original Interview Guideline for Civil Society Action at the Community Level

Interview Protocol

Time of interview:
Date:
Place:
Interviewer:
Interviewee:
Position of interviewee:

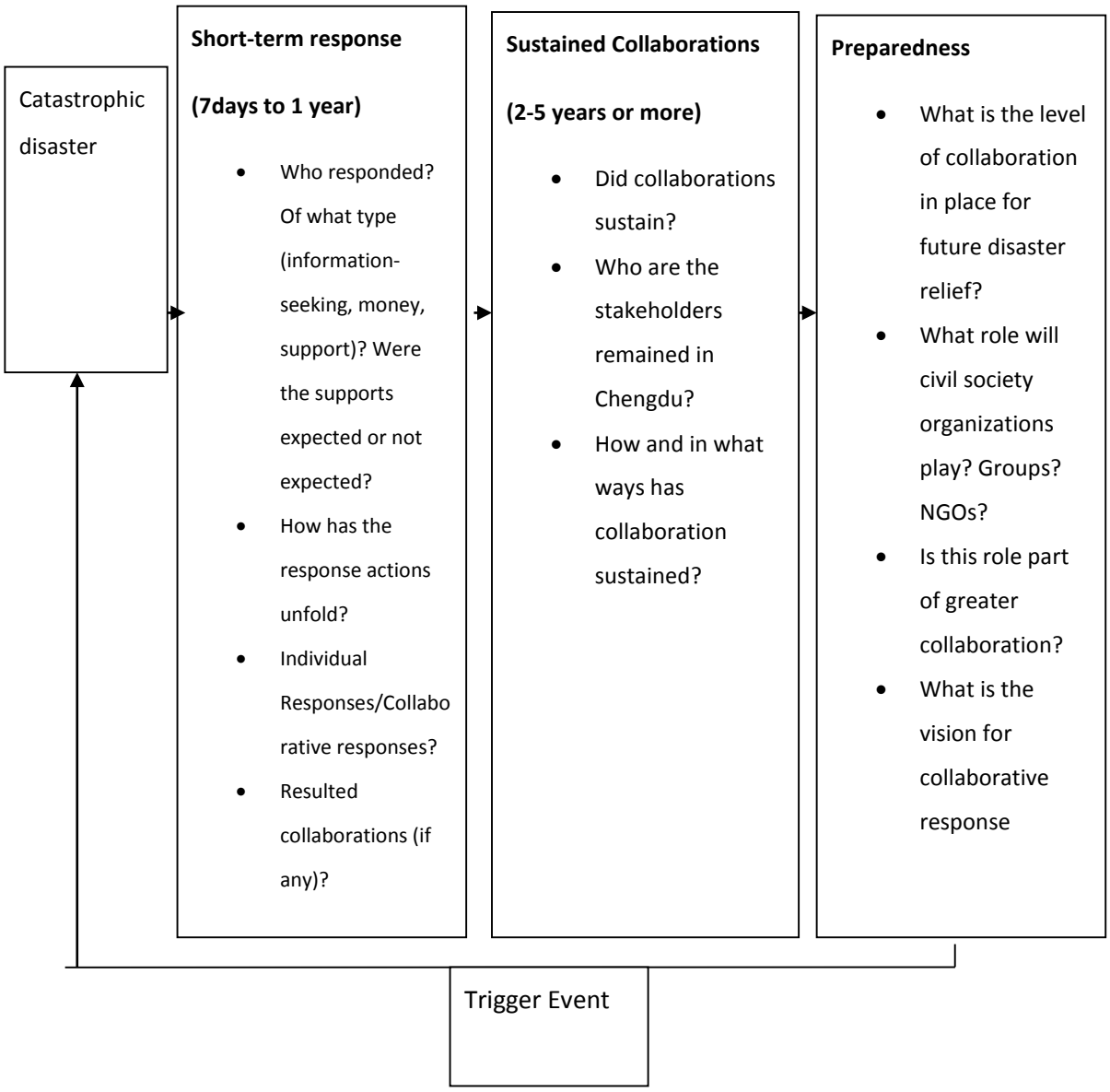
(Briefly describe the project)

Questions:

1. What has been your role in the aftermath of the earthquake? What has been the impact on you and your community/group/organization?
2. What has happened since the housing reconstruction you have been involved in? Has it been a success? What are the reasons why it has been a success, or failure? (Example: individual actor, institutional structures, politics, other circumstances?)
3. What did the earthquake bring forth or enable, in terms of the housing reconstruction initiatives, that would not normally happened? What are the short-term and long-term impacts on your neighborhood, your organization?
4. What role did the local neighborhood play during the housing reconstruction process?
5. Could you suggest any particular aspects or elements of the housing reconstruction in general? Any specific topics I should look at more closely for my research?
6. Could you also suggest the names of people I should interview, or documents I should look at?

(Thank the individual for participating in this interview. Assure him or her of confidentiality of responses and potential future interviews.)

Appendix 3.3
Original Network Data Questionnaire Guideline



(Source: Lu, 2010)

Sample questions:

1. Before the May 2008 earthquake, who was responsible for meeting the needs of residents in your community?

2. Between six months to one year after the earthquake, was any collaboration formed for the recovery of your community? Of what kind? Who are the appropriate partners to contact for your concerns in relation to the recovery plans of your residence?

3. Now, three years after the earthquake, are there any types of collaborations remaining in place in your community to provide services? Who would you contact for concerns related to daily living conditions?

4. Among the parties in the identified collaboration, who will you contact for emergency needs in situations like an earthquake? Who do you picture as the ideal collaboration partners for future disaster response?

Appendix 3.4

Field Experiences with Finalizing My Survey Questionnaire

"I met with XYJ again today to make some final confirmations on my survey questionnaire. The reason that I have consulted her through the process is because I would like to make the wording in my writings be understandable for civil society actors in the Chinese context. XYJ has dealt with me with great patience and made some great suggestions in making the survey easier to understand by taking into consideration of the local participants' perspective. That night, I finalized my survey called: 'A Study on the Wenchuan Earthquake Recovery: A Network Analysis Approach to NGOs'. Then, I asked for permission to give special thanks for the *** Center's assistance. I am not sure of the actually response rate will turn out to be but will try my best to encourage my respondents to get back to me as soon as possible." (LU, 2011)

今天又约到了 XYJ，继续为调查问卷定稿。我在写稿的过程中征求她的意见是因为想知道从他们那些非政府组织的角度看那些问题，会不会对我的撰写方式产生疑问。XYJ 很耐心的帮我梳理了每个问题的细节并提出了一些很好的意见。比如把与政府和企业合作相关的单题与表格合并，以减少填表人的填表压力。当天晚上，我把调研稿定了下来，名为：《汶川地震灾后重建调研：非政府组织社会网络分析》。并向 GGZ 老师申请能否把***中心列为致谢对象之中。我不确定这 138 个调研对象最终能有多少个能回复我的调研。但是，我还是可以尽可能的以各种方式联系到他们并敦促联系人完成填写。(LU 2011)

Appendix 3.4.1
Questionnaire Section of Social Network Survey

汶川地震灾后重建调研：非政府组织社会网络分析

政策，规划与发展学院

美国南加州大学

社会网络调查问卷 （2011 年 3 月）

Research Project on The Wenchuan Earthquake Recovery: A social network analysis of social groups and Non-governmental Organizations

School of Policy, Planning and Development

University of Southern California

Social Network Survey

尊敬的团队联系人，这份问卷调查将用于完成有关汶川地震灾后重建的博士论文。由此产生的数据将帮助论文执笔者了解您团队自 2008 年汶川大地震以来工作进展情况，各种正式与非正式的社会网络联系，以及能够为将来发展有利的各方面的需求。您的协助与配合将为我们了解将来如何展开大灾之后社会力量参与援建，重建与防灾能力的建设有很大的帮助。所以请您尽量真实和完整地回答每一个问题。执笔者将会对您提供的信息和数据进行有效的保密和采取匿名措施。在数据分析的过程中，每一个团体和组织的名字将被指定的数字所代替。我也很高兴与您分享此次研究的成果。如果您对这份问卷调查有任何的问题或者对数据的处理有任何的疑惑，请您和执笔人卢佳以电子邮件的方式联系（jlu1@usc.edu）或致电：（15608227996，中国成都）。万分感谢您的支持与合作！

Dear Sir or Madam, this survey will be used for the completion of my dissertation topic on the role of social groups and NGOs in Wenchuan earthquake recovery. The data will be helpful for understanding the formal and informal networks among groups and organizations formed after the 2008 Wenchuan earthquake, their relationships with the government and private enterprises. Your response will also help me evaluate factors that might assist the future development of these newly emerged groups and organizations. Your cooperation will be valuable in understanding ways the civil society can participate in disaster recovery, thus helping local communities to be better prepared for future disaster situations. Please answer as honestly and completely as possible. Your data will be treated confidentially and anonymously, where unique numbers will replace the names during data analyses. If you have any questions or concerns about this survey or how the data will be used, please contact Jia Lu via email (jlu1@usc.edu) or via phone (15608227996).

在选择题中，请您把被选对象的字体颜色改为红色即可。

For multiple choice questions, please mark your choice(s) in red color

1. 您所在团队的名称 Name of your organization:

_____

2. 您的团队是在什么时候成立的 When was it established:

_____

3. 您的团队是否为在中国已注册的非政府组织 Whether your organization was a registered non-profit organization?
   a. 是 yes
      i. 民政注册 registered with the Department of Civil Affairs
      ii. 工商注册 registered with the business bureau
   b. 否 no

4. 在汶川地震灾后重建的过程中，您的团队所参与过的行动属于 During the recovery stage of the Wenchuan earthquake, which of the following types of works have your organization been involved in:
   a. 住房重建 Housing recovery
   b. 助老助残 Elders and disabled
   c. 妇女儿童 Women and children
   d. 环保工作 Environment
   e. 心理抚慰 Psychological support
   f. 生计发展，livelihood help　　其他 others：

      _____

5. 为了做好防大灾于未然的准备，您的团队认为能提高备灾能力最重要的因素是 To better prepare for future disasters, which of the following would you think is the most important:
   a. 政府支持 government support
   b. 企业支持 private organizations' support
   c. 与其他非政府组织与团体合作 collaborations with other non-governmental organizations
   d. 信息交流平台，Information communication platforms

e. 其他 others: _____

6. 在下一页的列表名单中，请分别指出在地震后的三个阶段，您的团队取得了联系并与您有：1）分享信息和沟通交流， 2）项目合作的组织和团队，并在其相应的空格内填上英文小写字母“x”。 地震后的三个阶段定义为：a）2008 年 5.12 汶川地震前，b）地震之后，短期与紧急救援阶段（7 天到一年，您的团队联系上的），c）灾后重建与减灾阶段（为减少或消除大灾带来的影响与防灾能力的建设，2 年到 5 年或更长，包括现阶段）。

From the following chart, please point out which group(s) and organization(s) have your group or organization 1) shared information and engaged in communication, 2) engaged in project collaboration during the following three stages: a) before the May 12 earthquake in 2008, b) during the emergency and quick response period (7 days—up to 1 year), c) earthquake recovery and long term mitigation period (2 years—5 years or longer).

Appendix 3.4.2

Sample of the Roster List from the Original Social Network Survey

	名称/网络性质 Actors/Network Environments	信息分享与沟通交流 Information Exchange and Communication			项目合作 Project Collaboration		
		震前 Pre-earthquake	震后紧急与短期救援（7天-1年） Emergency Response (7 days-1 year)	灾后重建与减灾（2年-5年或更长） Long-term Recovery (2- 5 years)	震前 Pre-earthquake	震后紧急与短期救援（7天-1年） Emergency Response (7 days-1 year)	灾后重建与减灾（2年-5年或更长） Long-term Recovery (2- 5 years)
1	政府部门 Government						
2	企业 Businesses						
3	Actor Name						
4	Actor Name						
5	Actor Name						

Note: the original roster list included the names of a total of 138 actors. Each of them were given a unique numerical code as shown in the first column of in the sample roster list table.

Appendix 3.5

In-field Adjusted Interview Protocol

	Focus Area and Questions	Themes
1	How did you decide to be involved in the group/organization?	**Voluntary coordination or self-organization**
2	How have the actions unfold shortly after the earthquake?	
3	Describe what kind of changes/improvement would you like to implement regarding your group/organization?	
4	How do other group members feel about this change?	
5	What are the basic strategies or resources has the group/organization been using to facilitate the progress?	
6	Has there been any kind of support from the local government? Any of your efforts resulted in short-term collaborations with other groups, the government, and local enterprises? Of what kind? Did collaborations sustain? How and in what kind?	
		Institutional climate: enablers and obstacles
8	What kind of support have you received from local government, other cities, or any national and international nonprofit organizations during the recovery stage?	
9	Have there been any difficulties in implementing the change your community wanted?	
10	Have there been any institutional aspects that facilitated the change?	
11	What has been the greatest success in your group/organization's effort so far? What are the factors that have contributed to such success?	
12		**Information and Communication processes, The learning process to cope with risk**

13	How has the information being shared between your group/organization and other groups/organizations in the area, or local government?	
14	Describe what kind of changes/improvements you would like to see based on the existing information sharing processes?	
15	What is your vision in terms of being better prepared for future disasters?	

Appendix 3.6

Qualitative Data Analysis Thematic Categories

#1: Voluntary coordination and self-organization process

1-1: sources of individual action and motivation

1-2: sources of civil society emergence

#2: Institutional Climate: enablers and obstacles

2-1: Institutional Formality

2-2: Within sector (Civil Society?) action and institutional development

2-3: Cross-sector action and institutional development (civil society, state, market)

#3: "resilience" as a learning process, risk adaptation, and transformation

Appendix 3.7

Validity and Reliability of Data

I. Quantitative Data

Sampling and Reliability (Selection of NGO cases and Informants)

Unlike the formally established mathematical formulas to judge the reliability of sampling based on "application of theory of probability to large numbers of observations,…there are no such rules for judging the quality of relational data derived from a sample; and there are good reasons for assuming that sampling may result in unreliable data" (Scott 2000, 59). Bearing this in mind, several reliability issues that I encountered in the field are still worth discussing at this point.

The primary sampling procedure for collecting the relational data inherently involves purposeful sampling as exemplified in the combination use of the positional and reputational approaches for this study. However, the key informant of actor #3 had to be consulted to assist in the process of shaping up the boundary of the target population. This means that the construction of the roster list included in the survey relied more on the knowledge of the informant. Two reliability issues arise from the usage of a reputational approach. First, there must be "good reasons to believe that the informants will have a good knowledge of the target population and are able to report accurately" (Scott 2000, 56). In this research, the level of confidence in informant's knowledge is built through in-depth field immersion with consistent working contacts with the informant on a regular basis. I first came to know my informant from actor #3 during my second field trip in 2010. But the more intensive contacts between us started by my formal fieldwork in 2011. At that time, I visited the actor's field office in Chengdu on a regular basis to make observations on their operations and activities. Over time, as I became more acquainted with all the other members of actor #3, I realized that this key informant not only had the longest working experience since the establishment of actor #3 in 2008, she was also the person in charge of online information dissemination and the coordination of the communication platform activities. Therefore, upon having established certain level of working and personal relationship with her in the field, I made my decision to choose her as the key knowledgeable informant in assisting me determining the boundaries of my target population. Upon having an initial roster of

actors that can be further shaped-up into a working list for my survey, the way that I obtained it raises a further concern for the so called "snowballing" sampling technique in network boundary specification process. By its nature, "a snowball sample is likely to be organized around the connections of the particular individuals who formed its starting point" (Scott 2000, 56), which will result in a circular logic in justifying the connectedness of the actors. In the context of this research, the concern arises when the procedure for one actor provided a list of others might pre-determine its centrality in the network.

One remedy to overcome this drawback of the reputational approach is to use the inclusion strategy based on activity types that the actors engaged in. As part of the central research phenomenon, the study intends to investigate those civil society groups/organizations that collectively experienced the 2008 Wenchuan earthquake event and their short term and long term response activities. The boundary specification for including civil society actors inherently points towards those that not only participated in activities related to emergency response stage but also the recovery stage after the disaster. In other words, as a researcher, I am intrinsically interested in this particular event and the related activities pertaining group/organizational actors inside the civil society domain. Therefore, the set of actors that voluntarily organized themselves to participate as part of the communication platform built by actor #3 allows the study to focus directly on a particular set of agents whose actions were in accordance with the inclusion by activity criteria. At the same time, however, taking this list means that the centrality of actor #3, if indeed found in the later analysis, might be less informative as compared to a sampling process carried out independent of the particular social relations under investigation. Initially, this has become my data collection dilemma. The alternative was to spend even longer period of time of my fieldwork and use up more resources to generate a list that could be even less accurate as I myself was a complete outsider to the field that the actors were engaged in. As I continued with my contacts and interview sessions with the key informant, I learned that the formation of actor #3 was not with the intention to make itself a "leader" or "center" among all other participating groups/organizations. The actor itself was also perceived to be one voluntary participant that equally took action just like many others who played their role on top of the communication platform after the earthquake. Judging from my field observations, my interviews, and the voluntary spontaneous nature of the platform participants in response to the earthquake, I made my decision to use the list provided by actor #3. Further measures taken to enhance the reliability of the survey roster includes: 1) document

review; and 2) member-checking to collect other respondents' views on their own participation status during the survey distribution stage.

Another issue related to sampling reliability is in the multiplexity of the relational data being collected for the study. In the sample design, I asked the respondents to specify two types of relational content: 1) information sharing and communication; 2) project collaboration. In other words, one actor can have more than one type of network relationship with another actor at the same time. However, one concern I had when finalizing my survey design in the field was to consider possibility that different respondents might hold different interpretations of each of these two activities, or to the extent that they might not be able to distinguish the two interaction activities. Network analysts also noticed that these differences can arise from the differing social and cultural contexts within which actors are embedded in (Burt 1983). Essentially, one key question regarding multiplex relational data is: "who is to say when one type of relational content stops and another begins?" (Burt 1983, 37). For this research context, I had to find ways to make it as clear as possible of the meaning of communication and collaboration ties in order to facilitate the accuracy of responses from my respondents. One measure I took in the design of the survey was to briefly explain the background and the purpose of the research so that my respondents would have a general background understanding of their roles. Realizing that different respondents might have their own interpretations of the two relational contents, I provided them with some simple definitions of what communication and collaboration connections are in the context of this particular study. The second measure I took was to do a member-checking with my key informant from actor #3. The consideration here was that the group of actors under investigation not only exists in one particular cultural context, they also shared unique experiences by going through the earthquake event itself, the emergency response period, and the long term recovery stage after the earthquake. Therefore, an "insider's" perspective on the conceptual clarity of the interaction activities being investigated became valuable source of accuracy and credibility.

Validity of self-report

The relational data collected using survey questionnaires can introduce "artificiality" (Marsden 2005) into the collection process concerning that the validity of the data relies mainly on the self-report of survey respondents, especially when archival

documents are not available. In the survey questionnaire designed for this study, the respondents were asked to specify not only the type(s) of relations that they engaged with others on the roster list, they also had to specify the particular time period(s) that the relationship occurred among the following three given stages: before the earthquake, emergency response, and long term recovery. At the time when the survey was being distributed in 2011, it was a few months before the three-year mark since May 2008. This means that the respondents had to recall many of the relationships from the past and this would raise the concern for respondents forgetting certain ties upon reflection thus impair the validity of the data. One measure I adopted to reduce respondents' level of forgetting was to provide the entire list of actors under investigation in one roster to each one of the respondent. Compared to an alternative design to ask them to recall and name their own list of actors, the use of the roster list facilitates the recognition process of the respondents and thus limiting the degree of forgetting (Brewer 2000 in Marsden 2005). Secondly, past research in memory and cognition showed that the use of "landmark events" can bring about "potential benefits in questioning people about their past experiences" particularly in terms of improving "accuracy of temporal judgments" (Loftus and Marbburger 1983, 119). In the context of my survey design, the use of the 2008 catastrophic earthquake, as a "landmark event" among the Chinese civil society actors, in marking the division of timing for periods before and after the disaster would also help increase the reliability of the relationships thus being recognized.

Informant Accuracy and Competence

Earlier network research brought concerns for three sub-areas related to informant accuracy and competence when collecting relational data (Marsden 2005). The first issue is the correspondence between what the respondents report regarding the relationships they had and the actual observed interactions. The former is mainly treated as *cognitive data* and the latter as part of the *behavioral data*. Although the related set of studies presented in Marsden's (2005) paper showed "some confidence in self-reports as a valid source of network data, albeit with caution" (22), it is important to point it out as an aspect of planning and policy research that deserves future attention, particularly in the context of investigating actors at the group/organizational level in the disaster response and recovery. In this study, I adopted a partially cognitive approach to describe and interpret the relationships among civil society actors, the state and the market. Since the state and the market actors were designed as aggregate entities that will not have any

outgoing ties, the relational data thus collected were also being interpreted as the perception of civil society actors on their relational status with the two aggregate actors.

The second issue is related to the *competence* of the respondents in reporting on a whole network. Some earlier studies showed that centrally positioned informants will tend to have "higher competence" (Krackhardt 1990; Bodonio 1998; Casciaro 1998; Johnson and Orbach 2002; quoted in Marsden 2005, 23). Others also showed that informants' motivations could also lead to differing attentiveness of various social environments (Casciaro, 1998; in Marsden, 2005). The determination of respondent competence in this research study generally focused on the motivational side of the story. Throughout my two times of fieldwork in both 2010 and 2011, my personal engagement with the civil society informants and their works related to disaster recovery revealed their devoted attention and eagerness to making contribution to the construction of Chinese civil society in the awake of the catastrophic disaster. The motivational perspective was further being demonstrated through the collection of my qualitative data, which happened concurrently with the relational data collection.

The third issue is related to the usage of a sub-set of informants to extract the structure of whole networks. Research showed prospect for such possibilities in collecting network data (Marsden 2005), thus providing valuable strategies to save energy and time for future researchers, particularly those involve both quantitative and qualitative data collection methods. However, these earlier studies did not take into account of the unique context of disaster research. The interruption of a catastrophic event like the earthquake in China restructured many types of social relations, be it at the individual level or at the group/organizational level. The social structure before the earthquake is likely to be significantly different from the structure short term and long term after the disaster. In fact, disaster researchers had demonstrated such changes in various social contexts (Ganapati 2005). Therefore, in order to provide an accurate comprehensive picture of the whole network under investigation, I chose to distribute the survey to every actor in the original roster list.

II. Qualitative Data

Validation Issues and Strategies

Following Lincoln and Guba (1985), I choose to discuss the validity issues in qualitative research as *trustworthiness* of the study. Three trustworthiness issues were being identified by Padgett (2008) and they are: "reactivity, researcher biases, and

respondent biases" (p184). The following table illustrates the potential problems that each of them may bring to the qualitative section of the study.

Table A.3.1 Potential Threats to Trustworthiness in Collecting Qualitative Data

Threats to Trustworthiness	**Definition**
Reactivity	Potentially distorting effects of the researcher's presence on participants' beliefs and behaviors
Researcher Bias	Observations and interpretations are clouded by preconceptions and personal opinions of the researcher
Respondent Bias	Respondents subjectivity: they may withhold information and even lie to protect their privacy or to avoid revealing unpleasant truths

(*Source*: Padgett, 2008; adapted by LU)

In the context of this research, I used the following strategies to "combat" these threats of trustworthiness and enhance the rigor of the qualitative study. First of all, I conducted prolonged field engagement. I started building field relationships since my second field visit to Chengdu in 2010 and throughout my formal fieldwork stay from February to May in 2011. I maintained consistent interactions with my informants both in person and in observing their field activities. I had chances to build up trust with them through in person conversations and through online intermediaries, such as the QQ messenger function[240]. The prolonged stay gave me the time to constantly reflecting on the purpose of my study based on the reality in the field as well as my interactions with my informants. Some of the critical decisions in carrying out my research in a more focused direction emerged from the immersion in the local culture and seeing people in and out on a consistent basis. Over time, the familiarity of my presence increased my informants' trust and they also started to initiate contacts with me and inviting me to various kinds of activities. Although this strategy ameliorates both the reactivity and respondent bias, it does not help combat the risk of researcher bias (Padgett 2008). I therefore adopted two other strategies to assist in taking care of the researcher bias issue.

Triangulation by data source is one such strategy. Although this study did not adopt a formal triangulation mixed methods research design (Creswell and Clark 2007), I

[240] A QQ Messenger is a popular online communication tool that has been widely adopted by Chinese people. It is a chatting medium much more similar to the function of Facebook.

did use both the qualitative and the quantitative data to corroborate evidences collected on certain aspect of the research. For example, the existence of actors' communication and collaboration relationships were cross-checked by actors' self-reports from the survey and the relevant qualitative interviews with selected actors. This way, my familiarity of one informant developed from prolonged field engagement which might cause my own bias towards the importance in the centrality of the actor, would not clout the reality of relational ties actually "surrounding" the actor. And these ties were demonstrated by the existence of incoming nominations the actor received from the network data collection.

The third strategy I used to ameliorate the researcher bias is through *member checking* (Creswell 2007; Padgett 2008). The aspect of my research that I used this tool the most was during the relational data collection stage when I constantly consulted with the key informant in actor #3 on the design of my survey questionnaire. I asked her to examine the draft I created to ensure for proper wording and definition of certain concepts. She may provide some alternative language to use in order to convey the meaning clearly to the actors. From the experience of my fieldwork, I find that "shifting the authority towards participants" (Padgett 2008, 190) at the relational data collection stage to be valuable in designing credible survey questionnaires that respect the culture within which the respondents resided in. My old conceptions and previous opinions or un-recognized bias before engaging in the field prompted me to ask certain questions in a very complicated way that if without member checking with my informant, the accuracy of the data being collected could be very much compensated. Throughout the entire relational data collection stage, the survey was in general being well respected and accepted by my respondents and it triggered many of them to initiate contact with me regarding my research and started calling me as their long term working partners. They also expressed their gratitude towards me using an alternative lens to pay attention not just to their disaster response and recovery activities, but most importantly, their desire and devotion in making a change to the discourse of the Chinese civil society. It was during those moments that I started to realize the credibility of the research.

Table A.3.2. Strategies Ameliorating Threats of Trustworthiness in Qualitative Data Collection

Strategy	Reactivity	Researcher Bias	Respondent Bias
Prolonged Engagement	+	-	+
Triangulation (partial)	+	+	+
Member Checking	+	+	+

(*Source*: Padgett, 2008; Adapted by LU, 2013)

Aside from these three strategies, I also used "rich, thick description" (Creswell, 2007, p209) to provide a context of transferability when writing my qualitative sections. Due to the unique setting of the research in investigating the actors' experience of a catastrophic event, the detailed descriptions kept me from making too many quick interpretations and generalizations without first tracing the nature of the setting and the details of informants.

Reliability Issues and Strategies

The reliability of qualitative part of the research was accomplished through the employment of not only interview audiotapes but also field notes, journals, and saved online chatting records. The audio tapes were transcribed in such a way to record the nuances of conversations, changes in informants' mood and emotion, as well as locational setting changes. I myself was also the only person conducted the coding and the translation processes. With prolonged field engagement, cultural and language competency in the Chinese language by being a native speaker, the consistency of data coding, analysis, and presentation are being stabilized. This also allowed me to have a comprehensive understanding of my data and being able to focus more attentively on the theoretical conceptualization relating data back to the research questions.

Appendix 3.8

Fieldwork Observations at the Community Level

SOURCES OF AGENCY ACTION:

A BEGINNING

In Search for Chinese Civil Society after the Wenchuan Earthquake

Action Initiatives for Recovery at the Community Level

Why Chaping village

In this section, I trace back the beginning of my field journey in search for the meaning of Chinese civil society after the 2008 Wenchuan earthquake. I will first tell a story of my own frustrations and concerns when I first encountered the people and the place I have originally chosen as one of my field sites. The journey then went on by a surprising turn which provided me with further clarity regarding the focus of my research orientation in the Chinese context. Lastly, the findings in this case regarding "civil society" from the experiences of those directly impacted by the earthquake event at the local level will be presented by themes. And within each theme, narrative account told by my interviewees' will be used to provide a thick description of the context and the way of life being experienced.

Throughout both of my academic and personal life, I have been "wrestling" with the phrase "civil society" in search for a conceptual framework that can be used to understand how societies at the very grassroots level function and the possible sources of action that can be developed into policy tools in order to bring about an "improved" way of living for people across different cultures. This "improved" way of living, in my reflection, is not just about the changed physical living conditions as a result of higher economic affluence and status, although these are indeed important factors for people to live a decent way of life in whichever the social context they happen to be reside in. Initially, I drew my interpretation of an "improved way of living" from Sen's (1992) capability approach which reflects the person's freedom to choose from possible ways of

livings. However, from the qualitative part of my research investigation, I wanted to understand and examine how such way of living can be reflected in people's own actions and whether alternative interpretations would exist as the sources of actions were traced. Therefore, this became the starting point in me coming to terms with the meaning of civil society and designed the concept as a key theme in my research.

Choosing to focus on the associational and self-organizing activities within the conceptual domain of civil society in the current research context, I initially set out my journey to look at the experiences of local people whose lives were directly affected by the Wenchuan earthquake. By "directly", I meant those suffered either physical or relational losses due to the crisis event. And the majority of this group of population is located in the rural mountain areas of Sichuan Province (See Map 1.9b).

Figure A.3.8*A*. Earthquake Damage to a Chaping Resident of a Rural Community

(*Source*: photo taken by Jia Lu, 2011)

Figure A.3.8*B*. Earthquake Damage to a Chaping Residence

(*Source*: photo taken by Jia Lu, 2011)

I initially selected the site of Chaping village in the city of Dujiangyan as my first field visit considering two of the following factors. First, after went through government documents and local newspaper archival files of the officially recorded local citizen actions during the time of disaster recovery, I found out that the "village councils" (*村民议事会*) participated and managed by local residents were documented to play an important role in facilitating the local housing reconstruction process. Secondly, one unique form of the housing reconstruction process permitted by the government earthquake recovery planning document, allowed for the role of private investors in jointly participating in the housing reconstruction process. And it is often referred to as

the "joint reconstruction" (*联建*) recovery model[241]. The Chaping village became the first among all others in the earthquake-affected region to implement this type of recovery mechanism. Considering these two factors, I set out to discover if the "village council" or any other possible forms of civil society groups/organizations played a role in promoting Chaping's unique recovery process.

Figure A.3.8*C.* New Residential Housing for Chaping Village Residents

(*Source*: photo taken by Jia Lu, 2011)

[241] See Appendix 6.1.1 and 6.1.2 for brief explanations.

Figure A.3.8*D.* Temporary Hanging-out Area Formed Spontaneously by Local Residents Living in the Joint Reconstruction Complex in Chaping Village

(Source: photo taken by Jia Lu 2011)

Figure A.3.8*E.* Chaping Residents Gathering for a Moment of Sharing

(*Source*: photo taken by Jia Lu, 2011)

Figure A.3.8*F*. Chaping residents gathering Outside Reconstructed Living Complex

(*Source*: photo taken by Jia Lu, 2011)

Figure A.3.8*G*. Joint Reconstruction Housing Built for Private Investors in Chaping Village with the Scene of Earthquake Destructed Resident Houses at the Backdrop

(Picture taken by Jia Lu, 2011)

I first arrived at the Chaping village on 25 March 2011. During the initial field encounters with the head of the village and the party secretary, I came to realize that the "village council" that I set out to investigate in the first place only came into existence after the earthquake event in 2009 and indeed had a government mandated background. However, I did find out the existence of another type of council that was indeed formed in relation to the village's unique housing reconstruction process. It was called the "joint reconstruction council" (***联建议事会***). As I began to examine its nature of formation and its functions, it became clear that the entity initially emerged from the guidance of the local government and the village committee for the purpose of incorporating private investors into the village's economic development process. The following is the account from the village head regarding the emergence of the "joint council".

"This council originated from the needs of the joint reconstruction…none of the other villages has this (joint reconstruction committee), because the reason that we established it was for the economic development of our village. When they (the private housing investors) come here, they will also contribute to our village, to put it plainly, they invest their money which thus being used for our development. For example, when they invest their housing here, they would live with us and we would share the same environmental resources offered by the place. They would be more willing to contribute to invest in the things that could help the development of the entire village. (WQ-01)

. . . when looking at the government guidelines for housing reconstruction, we thought of the ways we could coordinate with those government plans…the main reason that we established the joint construction committee was really to get our investors together so that we can discuss the various ways they can engage in the economic development of our village, collect any suggestions or information they may have…for this purpose..

Lu: Was establishing the committee an idea of investors or from the side of the village?

WQ: It was originally raised on the side of the village government, and we sought for their (investors) opinions, and they all agreed on doing something like this.

LU: When did it first established?

WQ: last year, 2010, after the establishment of the village committee. (WQ-02)

As we can see, although the private investors participated and acted as part of the joint council for disaster recovery purposes, the impetus arose out of the requests and needs on the part of the village committee. The way that it was formed can be more closely regarded as an initiation of the function on the local government part. Therefore, its nature was not quite the type of civil society that I originally thought I was set out to investigate. They were, in my mind, characterized by self-organizing, voluntary, grassroots, and acting independently of the state domain.

Throughout my initial conversations with the village head and the party secretary, I was also surprised that whenever I insisted on knowing more about either the "village council" or the "joint reconstruction council", the types of responses I got were often filled with rather flat and mechanical tones showing signs of disinterests and lack of enthusiasm as compared to topics related to their own struggles together with other villagers both before and after the earthquake. The informants ended up describing the process as if they were emotionally detached from the experiences. Eventually, the village head revealed the motivations for suggesting a joint reconstruction council:

> We basically wanted to utilize the available personal networks and resources…in fact, they have not played such a big role in our recovery process. This is because the original impetus for establishing this committee was…since we decided to use the joint-reconstruction model, and with the investors living here with us, they become part of our village members and it would not be surprising that they would want to make contributions to the development of their new hometown too. For example, we would discuss issues related to the planning and development of our village with the head of that committee and a couple of the members. So throughout the discussion process, if the investors each raising different points, then it would be difficult to reach an agreement. So a committee was established. The main point is if the village itself develops both economically and environmentally, the investors themselves would also benefit too, such as convenience of traveling, better transportation and environmental conditions. We will have so many people living in this one place together, each one of us should make an effort to make it better and protect the environment. It doesn't matter if you make contributions through investment or personal networks. (WQ-03)

What then, as I was thinking, was the key that contributes to this particular village's action toward early implementation of the joint reconstruction process? Was there a role of anything resembling an emergent civil society at play? Instead of pursuing the set of pre-determined systematic questions of "village councils" and "joint reconstruction council", I decided to ask more open-ended questions to let the respondents to elaborate on their perceptions, how they experienced the crisis event, and how the actions were taken place. I realized that doing so would also require me to be open-minded in drawing the boundary of the civil society domain in the Chinese context. In other words, my further field interactions with informants took a turn in allowing a

narrative way for the respondents to tell their own stories. I organized the following findings according to the themes that thus emerged from their accounts.

Individual agency action during the recovery stage

WQ

The first time I met WQ was on 25 March 2011, at one of the village hostels right alongside of the main road winding through the heart of the village. He was a young man around late thirties and spoke in a very straightforward way with a tone full of energy.

WQ was voted to be the new village head after the 2008 earthquake. As we settled down in a large conference room with a half-working heater a few steps away, WQ started to talk about the journey of how he became the first person to have thought and started incorporating the private investors in the market sector into his village's housing reconstruction process and set out an alternative way of settling the issue for the rest of the village residents in a timely manner.

> Back then, I just thought that living in temporary housing was so not convenient….because it was during the summer time, so hot, and I just wanted to find a way to rebuild faster. And I also knew that if I did it, our other villagers will be following my example as well (and no longer have to stay in the temporary housing conditions). But I have never thought that once it started, my actions had such a big impact….I wouldn't say what I've done can represent on model or something, because the formal model (of joint construction) was first raised and allowed by the government. Just at that time, no one actually implemented and spread it in reality, and being able to solve the land property and ownership issues). Then, right after I did it, through the news publications, everyone started to know about it. (WQ-05)

> Here is how I first found the investor who was willing to execute the joint reconstruction with me. I personally found him on my own. He used to be one of my customers who came up here to purchase my pigs and we became acquainted with each other. Over time, he loved the attractiveness of our village natural environment and jokingly mentioned that "maybe I will come out here and build my own house and live nearby you". But of course, this type of housing construction was strictly illegal, called "small property right". After the

earthquake, I read through the government documents and saw that "recovery housing reconstruction can introduce outside funding reconstruction channels drawing sources from the society. So I told myself, isn't it the same thing as allowing using "small property rights" to earthquake recovery? Then, I can introduce someone here to build his house and help me building my own too." (WQ-05)

It's all for the economic development of the area surrounding our village…I am originally from this village and made some contributions to the housing reconstruction for our villagers…facilitated the things…and our villagers appreciated what I've done….so this is why they voted me as the village head. (WQ-05)

WZL

I first met WZL on 26 March 2011, the second day I arrived the village. He was in his early forties and like WQ, their ways of talking and attitudes were both filled with energy and vibrancy, dramatically different from my original impression of a much older, stubborn, and close-minded type working for the traditional village cadre system.

By further talking to him, I was surprised by the fact that he had a very clear and goal-oriented way of thinking through the issues facing the village, particularly during the disaster recovery process. This was reflected upon him elaborating on both how the decisions were made to draw in different types of private investors.

WZL: Some "bosses" were more well-to-do financially, and they would help build more housing. For example, some private firm investors had more money and they would joint construct 35 units of housing. And the firm will be able to use the ("left-over") land to establish businesses such as hotels and other leisure services. This is because when we were negotiating with them, we agreed that the "left-over" land property will belong to them, but they had to build some kind of livelihood-related businesses such as restaurants, so that our villagers could work there and have a stable income to support them. If only the houses were being built but leaving us no basis to make a living, we didn't want that to happen to our villagers. (WZL-01)

LU: How did this way of thinking came to you in the first place?

WZL: I used to be in the business of van transportation and have done it for 10-12 years, after that, I started my own village hostel service, and I would employ our local people. That's why I have a clear sense of how to operate businesses. Also, the natural gas pipes were connected to our village and this solved a lot of our cleaning issues in the village. After the earthquake, when we were negotiating with the "bosses", we would focus on how to help the villagers to make a living in the long term. So after they gained the land-use rights through the joint reconstruction process, we would ask them to build hotels or entertainment/leisure venues in order to solve our villagers' livelihood problems. This goal has always guided us in our negotiations. Right now, the jobs of 60-70 villagers are secured. (WZL-01)

Figure A.3.8*H*. Welcoming banners advertising for Chaping village chain hotels as part of an effort to help the community re-establish livelihood after the 2008 earthquake

(*Source:* photo taken by Jia Lu, 2011)

Figure A.3.8*I.* The first chain hotel established in Chaping village
(*Source:* Photo taken by Jia Lu, 2011)

Figure A.3.8*J.* Second chain hotel established in Chaping village
(*Source:* photo taken by Jia Lu, 2011)

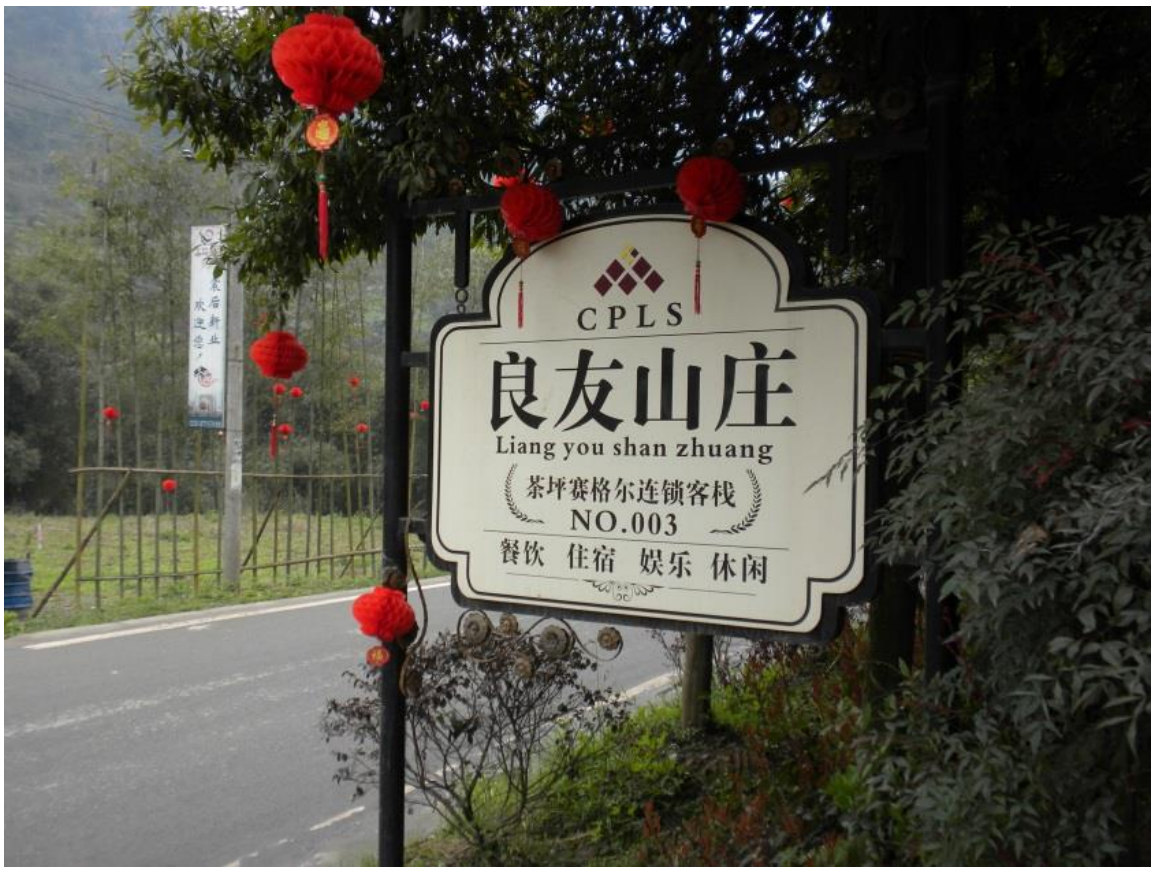


Figure A.3.8*K*. Third Chain Hotel Established in Chaping Village
(*Source:* photo taken by Jia Lu, 2011)

What kind of actions do these personal accounts reveal? For both the village head and the party secretary, a consistent theme in their being the driver of their actions was a vision and a devotion to the long term development of the Chaping village beyond the immediate needs for housing reconstruction at the time. There were two important factors that facilitated their recovery experiences. First, the role of the market was indeed at play in the actions taken at both the individual and the village level. For WQ, the mechanism for him completing the housing reconstruction through the personal connection with the private investor was made possible through a market exchange of land use as well as housing ownership rights, which was the essence of the recovery model by drawing in "private funds into joint reconstruction process". (引用社会资金联建)[242]. For WZL, his consideration for sustaining the livelihood of the village residents after the completion of

[242] See Appendix 6-1-2.

the housing reconstruction was realized through the hotel chain operations negotiated with the private investors at the time of the housing reconstructions.

Figure A.3.8*L*. Front entrance of the Chain Hotel Built through Private Funds Joint Reconstructed with WZL

(*Source:* photo taken by Jia Lu, 2011)

Figure A.3.8*M.* Chain Hotel Rooms Looking from Outside

(*Source*: photo taken by Jia Lu, 2011)

Figure A.3.8*N*. One Type of Joint Reconstruction with Chain Hotel Rooms and the Village Resident Housing Built Separately

(*Source:* photo taken by Jia Lu, 2011)

Secondly, the geographic and the facility endowments of the village provided further advantage it in attracting the attentions of the investors. Location-wise, the village is on the way to Daguan Township, an important byway to Qingcheng Mountain, one of the area's main natural scenery attractions. Facility-wise, the village already had natural gas pipelines, digitalized Television signals, internet and phone connections all installed.

Figure A.3.8*O*. Chaping Village Surrounded by a Mountain Area on the Outskirt of Dujiangyan City

(*Source*: photo taken by Jia Lu, 2011)

Figure A.3.8*P*. Partial View of the Post-Earthquake Reconstructed Housing for Local Residents

(*Source:* Photo taken by Jia Lu, 2011)

Upon recognizing these "outside" factors that put the village in a comparative advantage compared to others in the area to attract private funds for housing reconstruction, it started to become clear to me that action initiatives on the part of WQ and WZL were indispensable in initially exploring and implementing the joint housing reconstruction recovery model, not only for themselves but also for the residents of their village. WQ was keen in recognizing the possibility in this alternative way of reconstruction and actively sought partners in the market to willingly explore further. The housing reconstruction became a negotiated process for the long term economic development of the village when WZL took the initiative to bring about the issue of livelihood on the table when facing the investors.

Figure A.3.8*Q*. Chaping Residents sitting in front of a Local Convenience Store providing Villagers with Daily Produces

(*Source*: photo taken by Jia Lu, 2011)

Figure A.3.8*R*. Residents in front of the Two-story Re-constructed Housing
(Source: photo taken by Jia Lu, 2011)

Figure A.3.8*S*. Happy couple just finished taking wedding pictures taking advantage of the peacefulness of the post-earthquake environment and the beautiful natural scenery offered by the location of Chaping village

(*Source*: photo taken by Jia Lu, 2011)

In essence, it was their attitudes showing a strong willingness and devotion to try and explore the various possibilities to take actions for improving the lives of the village residents that stroke me in my heart. To some extent, they did have a choice of not choosing to participate in this particularly recovery model and passively wait for the centrally allocated recovery funds to be distributed and houses constructed from the government efforts.

WZL talked about the "idea" (理念) that prompted and sustained his action in pursuing the livelihood supports for the village residents after the earthquake. WQ also mentioned his "idea" that guided him in managing the village affairs throughout the recovery stage.

WQ: In my mind, I wouldn't even use the wording of "harmony" or "no harmony". The key is that everything must first be in accordance to the legal procedure, then, we would look at our cultural norms and practices, complemented by reasoning. If this thing belongs to you, it will be yours. If not, there no need for your expectations to go wild. That's it. It doesn't matter how you call it, like "harmony"….I personally would not use it, and wouldn't recommend using it neither. (WQ-06)

While encountering these accounts throughout our conversations, I could not help asking myself: "where did these ideas come from? What are their origins?" As WQ kindly introduced me to LMF, the village head of the last term, my journey of inquiry took a surprising turn in making a step closer to arrive with an answer.

A "Home-grown" Civil Society

Tracing the origin of individual action and motivation

LMF

The name of LMF was constantly mentioned during my conversation with WQ, and he kept suggesting me to have a chat with this former village head as it was someone who had influenced him significantly. The first time I met him was in a cloudy and cold March afternoon, a few days after I arrived the village. Although the old man definitely showed signs of aging, there was always a smile on his face and a general positive outlook whenever he talked about hardships in life.

As he was enthusiastically telling me how it was important to take the initiative to "find ways to self-help and standing up to be self-reliant" during the recovery process (还是要生产自救是不是啊，自强自立）as well as to "work hard with a diligent mind" (开动脑筋加勤奋), I quickly seized the moment and asked him "so how and when did this kind of way of thinking originated in the first place?" He started to tell me the beginning of the story.

LU: So when did your way of thinking emerge?

LMF: Since the establishment of our science and technology association twenty years ago. (LMF-01)

LU: How long have you been the village head?

LMF: I have been group leader for almost ten years, then became the village head, later as our village's party secretary, then became the village head again…to be honest, I really don't care about what title I have. The key is whether I can make contributions to our village and the area, to do things that can advance the development of this area and thus people's quality of lives… my life motto is: learning from every day. Back in the days right after the earthquake, we thought hard about the best way to reconstruct and put our living and work back together. On our own, we organized efforts to provide our villagers with rice and salt, and I did have any sleep for two days. Our S&T association did not have any party member and all were ordinary villagers back when it was first established. But now we have 7-8 party members and all those of village commission members also share membership in the Association. I am the president of the association. (LMF-01)

At that moment during our field encounter, I gradually developed a sense of clarity in terms of the source of actions that made this village unique in the disaster recovery process. The establishment of self-organized voluntary association for the purposes of facilitating economic development of the area and improving people's quality of life was at the center of attention. Tracing back the history of the Association, it was first established on Dec 30, 1990, almost twenty years ago from the time of my field visit in 2011. As was recalled by LMF, the issue of poverty was originally the main driver for establishing the association (Chaping S&T association).

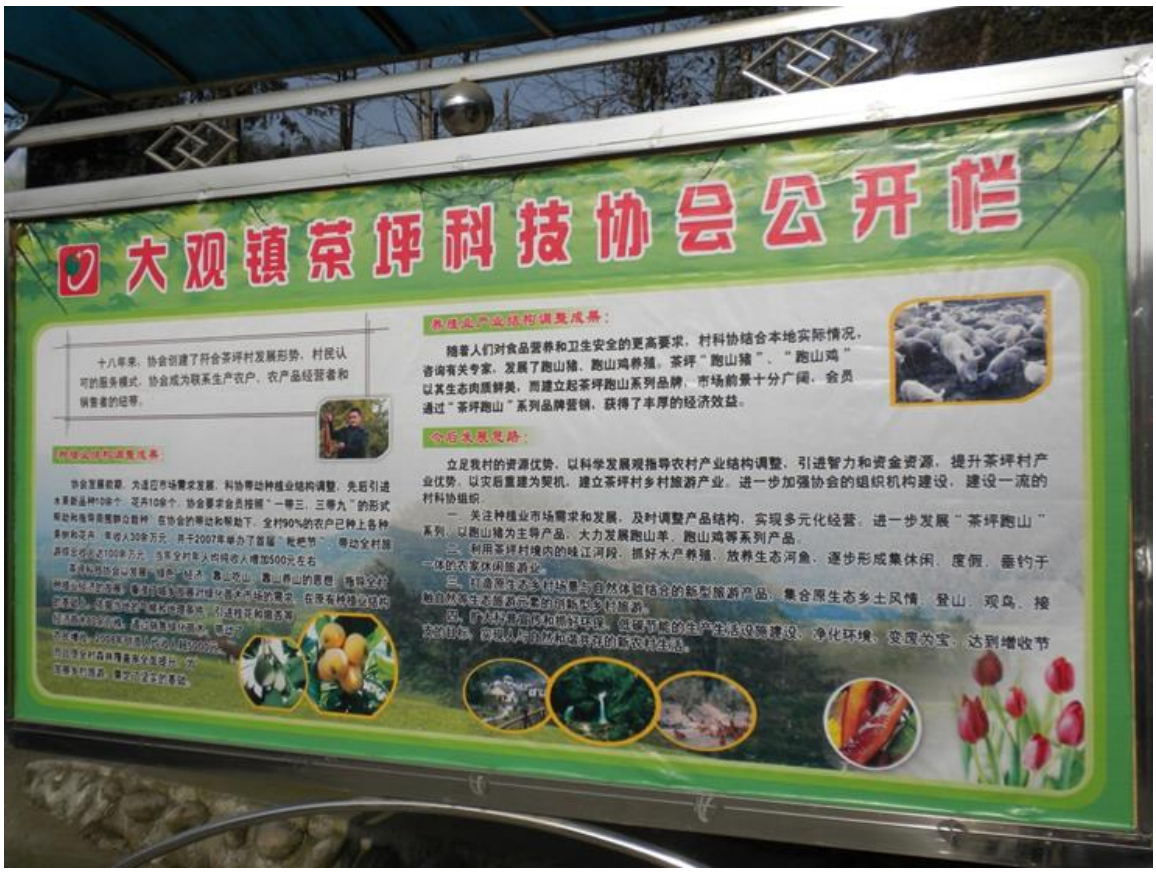


Figure A.3.8.1. Banner Introducing the Science and Technology Association of Chaping Village
(Source: photo taken by Jia Lu, 2011)

LMF: At that time, I grew apply trees and no one else in the village grew it except me. So they would sometimes steal from me. Those times were stroke with extreme poverty, my goal was to completely make a change to our situation. Back then, I was so poor and I had to wear those old and torn clothes. But the poverty condition also prompted me to think of ways to improve our situation. The living conditions should indeed be changed, but what cannot be changed is our nature of hard work, to be there for our villagers through both good and bad times, to do good works for and provide for them. Only those needed to be changed should be changed…

…our village's S&T Association is the smallest one in the nation. In the entire Dujiangyan area, we are not only the smallest but also the earliest one. The

Association was completely established through self-organizing efforts. During the 1990s, we had to make our application for approval from the higher level of government, then formally established. Our nature is one that is self-organized and made sought after our own legal identity (not established because of the specific appointment or requirement from the higher level of government). So when I first had this idea in mind, I talked about it with W. And I told him that I wanted to establish an association, and he (half jokingly) asked: "finance" association or "grain" association? I said neither, but a science and technology association, he highly agreed. (LMF-02)

LMF: If you want to want to become rich, your mind must become rich first. The goal of our S&T association is to encourage people to develop their minds first. Not like many of the millionaires, even if they are rich financially, their minds can be empty. (LMF-02)

LU: What do you mean by "enriching the mind first"?

LMF: What was the real reason that the German Nazi Fascist failed in the end? Why did the Japanese Fascism failed? Because they were presumptuous…they went contrary to the will of the people. They invaded and seized what belonged to others and killed others…such a complete failure…just as "those who have morals and serve the will of the people will gain the most support from others" (得道多助，失道寡助). This has always been true in the human history, you can't resist it. (LMF-02)

Aside from the motivation to help the village to rise out of poverty back at the time, a set of other "ideas" or more precisely, mottos that LMF kept dearly and drove the emergence of the association. First, it was the desire to think of ways for improving the living conditions of the villagers. Secondly, it was the recognition of a consistent learning experience for knowledge that can be implemented through the existence of the association. From these accounts, I recognized an initial "roadmap" of the origin of LMF's action and motivation for what I would call the proto-type of a civil society actor at the most grassroots local rural community level.

PRX

As I was showing more interests in my conversation with LMF on the topic of the Association, he became more excited and got more emotional when recalling the years of difficulties that the Association had to overcome. At one point, he suggested accompanying me visiting the homes of another two key members of the association and that way, he said I can grab hold of an in-depth development of it. And that was how I came to know PRX, also performed the duty as a village head and a member of the science association. At the time when we walk together to meet him, he was working at his river rafting rental station. The place was all empty as it was not yet the summer tourist season. PRX happily welcomed us and we sat down at one of the outside tables outside the general store in the rest area. I started to ask him the process of how he joined the association years ago.

> PRX: "The Association was established on December 12, 1990. Back then, I just got retired from the military service. The primary purpose of the association was to lead our villagers into better quality of life. In the 1990s, the living condition here was very difficult. In 1992, the four of them went to the LQ district to investigate which kinds of commercial fruit our village can engage in planting, thus moving our village from farming to commercial crops. They did a good job in it and after they came back, they recommended us to grow fruits like peaches. But we lack the appropriate knowledge and technical skills. So what should we do? Our most senior member, WHX, currently the Association's technical consultant, would volunteer to teach us the skills and the pest prevention in growing certain fruits like peaches. All had gone very well. In 1995, I became the village head. By 1996, I thought, I really need to become a formal member of the Association. As a young person and being the head of village, if I want to make contributions to improving the lives of our villagers, it would not be possible to be without any skills and no understanding of technologies. The Association could expand our experiences with many technical experts. I then wrote my application to join it. They also observed me for some period of time and asked me why I would still want to join when I am the head of the village. I said my skills could not catch up with the current development. After discussion, they accepted me". (PRX-01)

> "…The association developed many party members. I was already a party member when I joined the association in 1996. During our meeting back then, I

raised the point that the association was a place not only for developing people with skills but also those who are eager to grow in their political thoughts. So I advocated for younger people to join the party. Our current village head WQ was one example, and also our previous village head LMF. He joined the Party in 2004. If there are skilled people, the Association should definitely find them and develop their skills and technical knowledge, and build a 'bridge' between the Association and the village commission. The Association holds the key to our CP village's future development, I do not want to take away the power of the village commission (joking), but truly the members of the Association will take the lead the historical stage of our village". (PRX-02)

As PRX was elaborating on his experiences with the association over the years, I recognized that it actually meant more to him than participating and joining an ordinary group. At the same time that he was learning the tools and knowledge that can be applied to lead the villagers out of poverty, it offered him an opportunity for personal growth in gaining more insights regarding his purpose in life, which was directly related to a serving heart for others. Another part of the experience can be regarded as related to the members' understanding of their identity. Note that the association was also perceived as a symbol in PRX's self-identification as part of performing the role of a Party member in the Chinese political system. "Progresses in the political awareness" (*政治上也要进步*) and "thinking closely identified as part of the Party" (*大力向组织靠拢*) also became a role-identification symbol at the same time that the member putting their devotion in serving other village residents. PRX also took great pride in the "historical significance" of the association and his accounts also revealed a strong willingness to take up the roles and responsibilities in such an association with particular meanings in what he believed to be important in life.

"…the rural people are mostly simple and honest. People in big cities are rich…I only had a degree from a vocational high school back then, the first ambition I had was to join to Party after I arrived in the military. I don't understand why but I know it's something related to belief. I joined the Party the second year I was in the military. Four years later, after I retired from the military and came back to this place. I told myself, 'if I'm a party member, I do think about how to best serve the interest of ordinary villagers'. If I were given a role to play on the historical stage, I will devote the rest of my life to complete my responsibilities". (PRX-02)

WHX

The next stop we made was to the residence of WHX, another key senior member that started the association with LMF. This time, PRX joined LMF and me, as a group, we walked together towards the home of WHX. From the introduction of LMF, WHX was one of the founding members of the association and he was also responsible for providing teaching lessons, passing on development-related tools and experiences to other members. His personal reflection on the emergence and the development of the association further revealed the voluntary and the servicing nature that drove its initial establishment.

> WHX: The Association still some road blocks in the development of the Association….from our 'food gathering' club, we donate our own money to put together our meetings, today at his home and another day my home, all dependent on ourselves. Back then, we also have to donate some fee for our Association. It doesn't have any money on its own, so at least 5 Yuan…it's all because of our belief in building up our Association, for a firm foundation for our village's future development. Another goal is to train people with skills and technical knowledge to help with the industrial development of our village. We used to have a system of having one Association member lead the development of three other village households, one lead three. Back then we had a little more than ten Association members, so they led 30 some village households. But there are still some villagers are lagging behind, their way of thinking still fell behind. (WHX-01)
>
> WHX: If you are a Party member, you are pretty much qualified to meet the requirements for joining the Association. (WHX-01)
>
> PRX: Because you also need a spirit of self-giving and servicing others.
>
> WHX: In fact, we have been and still are doing it. (WHX-01)
>
> LMF: I have always volunteered my services since I first became the president of the Association.

Here, I would like to draw attention to a key concept that these members brought up throughout their accounts on the origins of agency action and motivations. It was what the members call "talented persons". The original understanding of the term arose from

the account of LMF when he mentioned his motivations in establishing the association as a place to encourage people keep learning and "enriching" their minds. Note that to LMF, such a "mind" had nothing to do with those who are thought of being "smart" or regarded as a "genius" in one way or the other. Rather, it was a term pointing at a general outlook in life, referring to a particular quality in "servicing the will of the people". Such a point of view can be further illustrated in the following accounts of LMF and PRX:

> LMF: What is the value of a group? What is the worth of an individual? The value of a group is defined by its goal in servicing others. For example, the communist Party is in itself a group, it serves others, serving all Chinese people. This is the value of the Party. The same thing is for individual. By servicing and giving to others, the worth of the individual will be realized. (LMF-PRX-01)

> PRX: It's a general outlook on life, which means that we need to have our own goals and a direction that we are heading forward to in our lives. Only then, the values of our lives will be complete. If there are no purposes in your life and neither do you have your own hope, then you don't have an outlook on life at all. (LMF-PRX-01)

As we come to PRX's reflections, the term not only meant those who learned advanced skills in managing crop growth and leading other village residents out of poverty, it was also referred in such a way that the growth of the whole person is involved. From my field notes recording the minutes of the association meetings for the past years, it became clear that these other parts of a member's growth incorporate "ethics, ways of thinking and conducts". But it kept me wondering the question "what do such quality specifically points to"? The answer was expressed explicitly when Wu's was talking about his own experiences, and it is a "self-giving spirit" being enacted in a dedication to serve others. While WHX further added an explanation particularly pointing at the voluntary nature of such actions, both PRX and WHX related this quality to being a Party member as well as its significance for those working as part of the village committee. At that point, I began to understand how the role of being a "talented person" became the motivation and reflected in the actions of WQ and WZL during the disaster recovery process. In the following section, I provide further insights to understand the nature and the institutional development of the association.

Source of Civil Society Emergence

Nature of the Association (Institutional Climate)

From the earlier accounts from the key members of the association, it can then be said that the entity did indeed started out as a self-organized informal civil society group. I then became intrigued by its nature of practice and the institutional trajectories developed over the years.

> LU: What's the difference between your S&T association and those at the national level?
> PRX: The ones at the national level are mainly for technological innovation, and our Association is for leading our ordinary villagers to improve their living conditions.
> LU: Is it appointed by the guidelines at the Provincial and the county level?
> PRX: No, back in the 1990s when we were first established, the one level above us was the Dujiangyan S&T Association. So after we established ourselves, we decided to make an application saying that we were preparing for an association at the village level in order to lead the villagers for better quality life in increased wealth.
> LU: But did they actually administer you (the association)?
> LMF: The line of our association can be traced to the one at the Dujiangyan, Provincial and the national level. But who is in charge of administering us is not the important thing, the critical issue is whether the entity itself can make the lives of the villagers better. If administration is always the top priority, but without any impacts or effects, then, what's the use of administering? Our S&T Association has almost 20 years of history, and it had two biggest impacts. One is to develop people with real skills and technical knowledge. We didn't have any Party members back then, and look at us now….the road that our Association chosen to take is the right path, you see, I joined the Party in 2004. And the other one is when we need to construct a road or water pipeline in the village, all these plans will pass through the Association thus making it a key participant in the village development process.
>
> (LMF-PRX-02)

To my surprise, after the association was first self-organized and established, members did sought institutional formality by "applying", or in other words, trying to register with the Dujiangyan Science and Technology Association at the local level. As was confirmed by LMF, the association was then indeed "managed" through the line of institutions at the local and the national level. However, it was not gaining an "outward" title of a formal institution that is thought to be the key from LMF's perspective. It is the association's functioning purpose that can meet certain set of expectations within that social context that would count towards the recognition of its existence. Its institutionalization process revealed a journey of becoming socially and culturally accepted when part of its roles was blended with leading the economic development of the village and most importantly, the training of "talented persons" along the way.

I also noticed that although the association was voluntary in nature, it did establish its own guidelines particularly in the joining process. Recall that PRX had to go through a so-called "observation period" before he was formally accepted as a member. As was pointed out by LMF, the emphasis of the "idea and thinking" (思想) aspect of the member quality came before all other types, such as devotion to economic growth of the village and to learn skills related to farming technologies.

LU: Can anyone join the Association?

LMF: Any of our villagers, as long as they wanted to, they can join. But they will have to write applications, take exams, and take oath. For almost twenty years, we've always been a grassroots civil society organization…and played a role of promoting the economic growth of our area. We also helped train people with skills and our activities are held once every season. The mind first, economic development second, and learning technologies and skills third. (LMF-03)

As other kinds of informal civil society actors, this associational actor also experienced obstacles when it performed its functioning. LMF and PRX specifically pointed out two of the difficulties that they had to overcome and one arose from gaining financial support as a "grassroots" group.

PRX: The biggest breaking point for us was when we were thinking about growing commercial crops. This was not an easy job to guide all our villagers onto this road…

LMF: Back then, if you were a member of the Association, you would have to guide three other village households, so three would be nine, nine would be twenty seven, and so on…

LU: Did you encounter any obstacles?

PRX: One of our biggest problems is the shortage of financial support. This is because our Association was a self-organized civil society organization, we wouldn't be able to receive any funding from above.

LMF: We didn't ask for it from the government, nor did they administer us all along.

(LMF-PRX-03)

The Role of the Association (Civil Society and the State)

Another important characteristic of this association was its relationship with the village committee, which can be thought of as part of the state sector in a broad sense. As the members elaborated on their answers on my questions regarding this piece of the puzzle, I recognized an intricate interaction between this civil society actor and the state in this context of analysis.

LU: So what role did the Association play in general?

LMF: Push the development for this village forward.

LU: But what is the difference between the Association and the village committee?

LMF: Our role is one of coordination and facilitation. In fact, we are village party branch plus association, together work for the economic development of the village. If rural people wanted to change their lives, several factors are important. One is to rely on the development policies designated by the Party, second is science and technology, third is devotion (investment?), and fourth is to rely on forward-looking mind. If any of these are missing, it won't work. Our Association also has our own stamp, emblem, and institutional guidelines. We currently have more than a dozen members.

PRX: The younger members of the Association played a role of coordinating the implementation of the joint-reconstruction works in our village.

LMF: Because the implementation of the Party's development policies will still have to be led by the local Party branch and the village commission. This relationship is not to be deviated from.

WHX: Plus it is also important to facilitate national policy's implementation at the local level and coordinate communications between the citizens and the village level government, thus helping the works of village head and the party secretary.

LMF: Members of the administrative leadership team in our village are also members of the Association. We are like a family now. Inside the village commission, we (association) are being led by the village head and the party secretary. Inside the Association, they listen to us. This is our relationship. As of now, both the village head and the Party secretary are members of our Association.

(LMF-PRX-04)

The interaction can then be summarized in two categories. On the one hand, there is the aspect of functioning identification. As a separate entity apart from the village committee, the association has its own independent functions in supporting the economic growth of the entire village. It also had a set of its own goals and institutions as rules and regulations in guiding the performance of its member. On the other hand, there is the aspect of role identification. It is in this domain that certain level of overlapping between the association and the village committee came in. As was emphasized by LMF, the people at the time holding positions in the village committee were all members of the association. Therefore, the association itself was perceived as performing a "coordinating" role as its members also perform duties in the village Party branch. For example, the members of the association also facilitated the "joint housing reconstruction" process during the disaster recovery stage after the Wenchuan earthquake. These two kinds of relationships between the association and the village committee can be looked at through the following lens illustrated by the figure below (see Figure 3.8.2).

The driving source in forming and activate the S&T association cannot be separated from how the members identify themselves with the perceived values of the

Party State. And such values were being further distilled into their everyday life as well as their belief systems. The functional overlap represented by the cross-membership of the self-organized association and the village committee demonstrated an embeddedness of the civil society at the local level inside the state functioning domain. At the same time, both domains belong to, or more precisely, operate in a larger institutional framework set forward in the mandates of the Wenchuan Earthquake General Recovery Plan.

Summary and Lessons Learned

The findings on the sources of emergence of civil society action and its role formation over time are illustrated in figure 3.8.3. I admit that this was indeed a special case regarding the emergence and development of a civil society actor in particular to this local rural context. However, my personal experience in getting to know the people in the village throughout my stay there, along with a discovery of the existence of a grassroots associational civil society actor and its role in bringing about changes to the lives of the village residents after a catastrophic earthquake, provided me with further clarity of how agency actions can be understood and the significance in paying attention to reveal the underlying motivations and seeking the source of emergence when trying to understand the meaning of civil society and its role in disasters within the Chinese context. The initial frustration in the field encounter became a stimulant for further pursuit with a refined focus in my research strategy. The experience also prompted me to ponder the nature of Chinese civil society and it became one of the research themes distilled through my investigation of the emergence and persistence of other kinds of agency actions in the civil society domain.

The second valuable lesson that I learned through this field encounter was recognizing the importance of paying attention to the social aspect of planning policy, especially at the times after catastrophic disasters. Although the general disaster recovery plan designed and implemented by the Chinese government provided an institutional context within which the public can engage in the process, the recognition of how the social actors can perform their functions and be encouraged in the process were left out. The case of Chaping revealed that even the most localized grassroots civil society actors could play unprecedented role in making a contribution in being the source of resilience. Policy-making tools designed to enhance their capability of functioning and sustainability

particularly during the mitigation and preparedness stages are critical to build a resilient social structure that can stand strong when facing crisis.

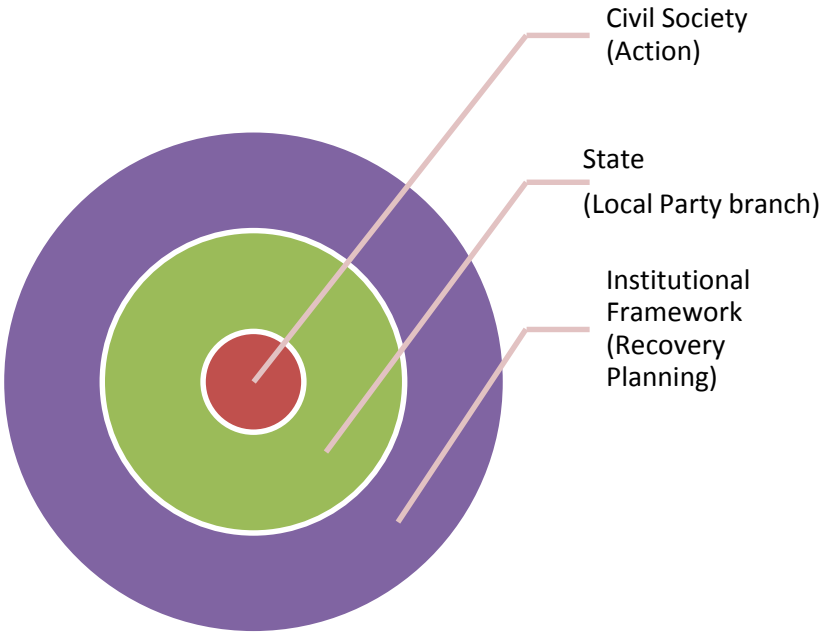


Figure A.3.8.2. Civil Society and State (Chaping Case)

Figure A.3.8.3. Thematic Summary of Civil Society Actor at Community Level (Chaping Case)

Appendix 3.8.1

(Government Document Review Selected Translation)

Explanation on the "Joint Housing Reconstruction" （联建）in Wenchuan Earthquake Recovery

The Daguan (Township) Chaping (Village) Model: Utilizing "Joint Reconstruction" policy

1. Specific Form

During the disaster recovery process, the Chaping village implemented the policy idea of rural-urban integration, made full use of the results from the rural land property reform. By fully utilizing its advantage in geographic location and previous establishment of basic infrastructure, it actively introduced private investments to realize the "joint reconstruction" model after the Wenchuan earthquake. Through building up the rural hostel and restaurant chains, it constructed a platform helping its villagers have sustainable income sources, thus successfully moving forward the coordination between disaster recovery and industrial development in the rural-urban integration layout.

2. Characteristics
    a. Introducing private enterprises to participate in the joint reconstruction of multiple rural households at the same time. One company reached agreement with multiple sets of households living in different village groups. It is implemented in the format of "group joint consumption" reconstruction.
    b. Introducing natural person to participate in the joint reconstruction. Agreement was reached between one natural person and multiple village households. At the same time, the investor also agreed on a plan in building "village motels".
    c. Introducing natural person to participate in the reconstruction with one village household.
3. Significance in Innovation
    a. Actively introduced social investments to resolve the financial "bottleneck" problem for rural communities to rebuild after the earthquake.
    b. Resolved the housing issue for people impacted by the earthquake, improved the general quality of housing reconstruction, both in terms of space and the quality of the housing structure.

c. Fully embraced the advantage of rural communities' proximity to the natural environment, boosting the tourist industry as a way to approach the development of the region.

Appendix 3.8.1*A*

(Original Document)

大观茶坪模式：运用“联建”政策，实现一、三产业互动[243]

1、具体形式

茶坪村在灾后重建过程中，运用统筹城乡的思路和方法，结合农村产权制度改革的成果，利用依山傍水的优美旅游环境和完善的基础设施优势，积极引入社会资金采取“联建”方式进行灾后重建，并在联建过程中突出后续产业发展，布局未来乡村连锁酒店业，构筑村民可持续增收平台，有效推进了灾后重建与产业发展的统筹布局。

2、典型

一是企业参与多家农户联建。该村 3 组 12 户、4 组 20 户、5 组 3 户共 35 户农户与中国建筑技术集团有限公司成都分公司达成协议，以“团购”形式进行联建。

二是自然人参与多家农户联建。自然人贺先生与 1 组 7 户人（YZF、YYG、YJW、YJQ、YYL、YYC、LCL）进行整体联建。现农民安置住房已动工修建，年底完成交付使用。同时，联建投资方修建的“乡村酒店”项目正在做规划设计，11 月开工建设。

三是自然人与农户联建。自然人张先生、邓先生分别与 4 组王全、WZL 达成协议进行联建。另已有两位自然人分别与 1 组农户 WTC、WTH、LZM 达成了意向性联建协议，目前正在进一步协商相关事宜和完善相关手续。

3、创新意义

一是引入了社会资金，解决了农村受灾群众重建资金瓶颈问题。据测算，该村引入的社会资金总量预计可达 1100 万元以上。每家参与联建的农户将节约住房重建资金 10 万元左右。

二是解决了受灾群众的居住问题，提高了重建水平。通过联建，一方面是受灾群众每家可获得 100 平方以上的住房，居住问题得到根本解决，另一方面是提高住房重建质量和水平。

三是发挥了农村的环境优势，解决了受灾群众的后续产业发展问题。该村无论是企业联建、多家农户联建，还是自然人联建，在签订协议初期，都非常注重对产业进行统筹布局，确保村民能够持续增收。投资方在完成联建农户安置房建设后，将流转剩余建设用地用于旅游服务项目开发。联建农户还可利用空余房屋与投资方合作，以“加盟连锁”的形式搞“乡村家庭连锁客栈”经营，从事第三产业，实现一三产业互动发展。

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[243] Original document provided by Dujiangyan Planning Department

Appendix 3.8.2

(Government Document Review Selected Translation)

Chengdu Post-earthquake Reconstruction Planning Exhibition
Joint Reconstruction Theme Week
(November 4, 2008)

The Joint Reconstruction Policy

1) Support those rural townships and villages with their locational advantage to look for innovative ways in introducing outside funding for housing reconstruction.
2) Those households who qualify for reconstruction at the original site can use their legally obtained land property rights as well as the proximity to the natural environment to introduce social investments to establish joint housing reconstruction process.
3) According to the procedures of rural property rights reform and registration process in managing collective industrial land and housing ownership rights, the role of the government is to ensure the legal rights of the parties reaching agreements not being violated.

Appendix 3.8.2*A*

(Original Document)

成都市灾后重建规划展
都江堰市主题周联建签字仪式材料

一、基本情况

作为极重灾区的都江堰市，在“5.12”特大地震中，城乡居民住房受损达 22.84 万户，其中，农村居民住房受损 12.38 万户。解决受灾农户居住问题成为当前政府的主要工作。我市按照省、成都市的统一部署，运用统筹城乡的思路和办法，充分尊重群众意愿，创新农户原址联建、村组集体经济组织联建等不同形式，着力构建政府引导、群众主体、社会参与的重建机制，加快我市灾后农村住房重建进程。目前，全市有联建意愿 3000 余家农户中，有 900 余家农户与社会投资者签订联建协议，102 家开工建设。社会投资者与村组集体经济组织签订协议 50 余份。

二、联建政策

（一）支持有条件的乡镇和农村集体经济组织，结合本地资源优势，自筹资金或招商引资开展住房重建。鼓励灾后自建的农村居民利用合法取得的宅基地和良好的生态环境资源，吸引社会资金联建。

（二）符合规划原址重建和按照规划集中自建的受灾农户，可使用合法取得的宅基地，引入社会资金联合重建住房。

（三）灾后农村住房原址自建（联建）参建者免征收基础设施配套费用；免费向原址自建农户发放住宅设计式样并附施工图；对原址自建（联建）、统规自建（联建）工程实行全程技术指导和跟踪服务。

（四）政府根据农村产权制度改革和产权登记管理的有关规定办理集体建设用地和房屋产权，确保联建双方的合法权益。

三、联建程序

（一）联建方与农户、村民小组签订《联建协议》。

（二）建筑面积在 500 ㎡以下的，向乡镇政府提出建房申请。建筑面积在 500 ㎡以上的，向乡镇政府提出建房申请，并办理报建手续。

（三）建设。

（四）建筑面积在 500 ㎡以下的，向乡镇政府申请竣工验收备案。建筑面积在 500 ㎡以上的，向规划部门申请规划验收，向建设部门申请综合竣工验收。

（五）向房管、国土部门申请办理房屋、集体建设用地产权确权登记。

二〇〇八年十一月四日

Appendix 3.8.3

Original Informants Accounts in Chinese

WQ-01

...这个是跟据我们的联建的需要产生的。。。其他的村上没有成立这个（联建议事会），因为成立这个的主要目的还是为了我们本村的经济发展，他们来了为我们村作贡献，说白了就是他们那些老板儿掏腰包。比如说他们这些联建商，他住我们这，我们这里这么大的这个资源环境，那么他住在我们这里，他也希望我们这里发展的好，那么他们就会（主动）筹集资金，或者几个联建商一起赚钱。

WQ-02

...说白了就是,当时从我们这个灾后重建的手续上大家讨论出一个方案，大家讨论应该怎样跟政府配合。。起这些作用。我们（成立联建议事会）的主要目的还是我他们这些联建商有钱人集中在一起，为我们这个地方的经济发展出点力，出点意见阿，提供点信息阿，帮助发展我们这个的经济阿，这个目的。

卢：（成立议事会）是他们提出来的吗？还是你们提出来的呢？
王：我们从村上和政府这边提的，然后征求他们意见，他们全部都非常满意，同一搞这个事情。
卢：这个村民议事会是什么时候成立的呢？

王：这个是在去年（2010）年成立的。是在村民议事会成立之后。

WQ-03

Wang: ...我们主要是想利用这种关系和资源，实际上他们在灾后重建中并没有起到多大的作用。因为当时成立这个的出发点主要就是，既然用了联建的模式，由居住了这么多有钱的人居住在我们这个地方，那么他们住在这里，不光是把老百姓的房子解决了就完事了，说白了就是你到我们这里住，也算是我们茶坪村的一分子了，一分子你就应该为建设自己的家乡出力。比如说议事会还有议事长还有几个委员，那么我们村上的发展规划就会跟你们几个共同探讨，因为联建商每一个人都说不一样的出多少肯定不行，那么经过你们议事会，就说这个东西搞起来对我们所有的联建商都有好处，比如说出去就餐，乘车之类的，环境搞好了，以后我们这个地方就我们这么多人在这里居住，我们应该对它进行保护，要不然我们这样，钱多得多出一点，钱少的少出一点，有关系的走点关系，主要就是这样。 (WQ-03)

WQ-04

WQ: The entire Dujiangyan belonged to the disaster-impacted area. But there were differences in the level of damages across areas. The area where our village is located belonged to significantly-damaged area. The houses of 80 of our villagers crashed completely, and about 10 houses were partially damaged. We are located here in the mountains, so this is why the earthquake had a quite serious damage to our village. We are geographically located in the Longmen Mountain. (WQ-04)

王：整个都江堰都是灾区，只不过分轻灾和重灾。我们这里属于重灾。我们村 80 几户人家倒塌，10 多户垮塌，因为我们是山区比较严重。而且我们这里恰好处在龙门山脉，这个地震就是在龙门山脉。(WQ-04)

WQ-05

王：当时我就是觉得住板房太。。。因为当时是夏天吗，太热了，也不方便，就像抓紧时间建好房。当时我就想了这个问题，如果我一建的话，可能我们这里的老百姓可定就会跟着我建的，我也没有想到一建起来就会成为这么大的一个。。。还不能说是模式，因为模式应该是政府提出的，但是当时还没有人把它推广开[我想应该是当时还没有人将这项内容进行实施，比如说土地问题如何处理，所有权问题等等]，然后我这么一搞，又经过媒体的报道，又搞得全部都知道了。当时我找联建商是这样的，因为这个联建商是我自己找的，它和我比较熟悉，因为他每年都要到我这里来买跑山猪，它对我们这个地方的环境比较认同，他曾经跟我开玩笑就说，“什么时候我到这里来建个房子，和你们一起住”。 当然，在地震以前把，这种方式就叫做“小产权”，不允许的。那么地震之后，我就看到文件上说是“可以引进社会资金，参与灾后重建”， 我就想，这不就是利用这个“小产权”来搞灾后重建马，那就恰好可以让某个人过来，就可以让他过来建房。他把自己的房子建了，也把我的房子建好了。

…就是加油发展我们这个地方的经济吗，（我）以前一直就在这个村，然后再灾后重建的一些工作之中，主要是通过灾后重建的工作，主要为老百姓打下的协调的事情比较多。。。。我可能在这一方面，老百姓还是比较认可。所以说就这样糊里糊涂的选上（村长）了。

WQ-06

王：从我的理念上，我在我们村根本就不提什么和谐或者不和谐，就是每一个事情都以法律法规，然后按照我们平时的这个风俗习惯，还有讲道理，这个东西归你就归你，谁也拿不走，但是这个东西不归你，你也不要去奢望。就是这个概念。什么“和谐”社会，我觉得在我自己的脑海里，都没有这个词，不要用这个词。

WZL-01

王：有的老板资金宽裕，就多联建几户，有的公司资金多，他就联建35户，公司就用那个宅基地开会所，办旅游，开酒店。主要是我们谈得时候， 剩余的宅基地交给你，你要搞什么餐饮，做什么， 解决我们老百姓的生活生产问题，我们谈得时候就要跟他们谈好，你不能只修房子，要做餐饮，主要是解决我们老百姓以后的吃饭问题，光有栋房子修好了，老百姓没有收入，没有饭吃也不行。必须使这样的。

卢：你们这种考虑问题的很清晰的想法是怎样就自然产生的呢？

王：我以前是经营中巴车的，已经开了10年到12 年了，下来之后，同时开农家乐，请得都是本地人，所以说我的这个经营理念非常明确，而且我们这个村天然气开放，解决了老百姓打扫卫生的一部分问题。那么这次地震之后，我们就跟老板们谈，老百姓以后的生活怎么办，就考虑这样的生活问题。老板们来，就跟他们谈，以后你们这部分宅基地流转给你之后，你要修酒店，会所，娱乐场所，来解决我们当地老百姓的务工吃饭问题。都是用这个理念根他们谈的。我们这里现在解决了60-70个人的务工问题。

LMF-01

您这种思想从什么时候就有了呢？

刘：二十年前从袖珍科协就开始了，

卢：您当村长多长时间了？

刘：我开始当了十多年组长，又当了村长，又当书记，之后又当村长，我不在乎我当什么，主要是对这个地区的奉献，这个地区能不能够富裕起来，。。。我一生中有八个字的座右铭：好好学习，天天向上。 。。。当初刚地震的之后，生产生活咋自救，村里就组织为大家盐，大米，我整个两天两夜没睡过觉。我们科协当初一个党员都没有，到现在发展了7-8个党员了。我们科协原来都是老百姓，现在村联委都是我们科协的人。我是科协主席。

LMF-02

刘：那时候我家种苹果，其他人没有种，他们就摘我的吃，要偷我的。那会还很贫困，就是想改变这个地方的面貌。。。我当年阿很穷，穷得叮当响，穿破衣裳，但是穷则思变，穷人的孩子早当家，但是该变的是要变，劳动的本质不能变，和老百姓在一起这个本质不能变，为老百姓做好事不能变。该变的要变，不该变的不能变。。。。

…我们茶坪村的科协是全国最袖珍的科协，全国阿，最小的科协。然后在都江堰范围内，是最早也是最小的科协。而且都是自发的。在90年的时候，也是写申请，向上面批示，才能正式成立的。是自发的自己申请的（不是通过上面发展领导下来的）。当年成立协会的时候，我就来找吴老师，我就说，我要成立一个会，他问是“钱会”还是“粮会”，我说两个都不是，是科技协会，他就很赞同。

刘：你要富裕，你首先脑筋要富裕起来，我们科技协会就是要鼓励人们脑筋要富裕起来，有的百万富翁，但是脑筋非常之空，

卢：您理解的头脑先富是什么意义呢？

刘：我以前说过，德国法西斯为啥失败了，日本法西斯为啥失败了，因为他们狂妄，他们违背了人民的意愿，侵占别人，霸占别人的财富，杀人，你说他们失不失败，得道多助，失道寡助。历史规律，不可抗拒。

PRX-01

彭：科协是90年12月31日成立的，当时我正好退伍回来，这个科协阿，首先是带动我们老百姓致富。他们90年成立的，当时老百姓生活很困难的。92 年的时候，他们当时4个人，去龙泉区考察，就考察这个种水果。把这个中粮食改为种经济作物。他做的很好。92年，他们就把苗子考察清楚了，回来就号召我们全村人民种水果种桃子。但是苗子要栽的马，又缺技术，那怎么办？ 我们科协的老会员，现在的顾问，他就每天给我们讲管理的技术，像管理桃子的病虫害啊之类的，做宣传，真的很好。我95年当了村长，96年我一想，不行，还是要加入科协，作为年轻人，既然是村长，要为老百姓做工作，没有一技之长，不懂技术，咋能带动老百姓致富呢？科协里的经验多，技术人才多。作为年轻人，应该学技术来带动老百姓致富。然后我就写了申请书，当时他们还考察我一段时间。他们说你村长还参加科技协会阿，我就说我的技术肯定跟不上社会上的发展，后来他们讨论之后就接受了，一直到现在。

PRX-02

…协会发展了很多党员，我 96 年参加科协的时候就已经是党员了，当时开会的时候我就说，科协人才辈出，政治上也要进步，所以就提倡年轻人大力向组织靠拢，比如说我们现在的王村长。（还有像）我们这个老村长老会长（指的是 LMF），他在 04 年终于加入了组织。有人才，（科协）就应该挖掘人才，然后培养出人才，给我们村上的两会班子搭个桥这样子。老同志就说我，今后茶坪村的历史舞台应该是科技协会，我没有想夺权阿（笑），科技协会的成员带领历史舞台。

…农村人把， 比较憨厚朴实，大城市的人富裕，。。。我当时就是职高毕业，我第一个理念就是到了部队以后要入党，不知道为什么，反正是一种信仰问题。到了部队第二年我就入了党。四年多以后，我退伍了，回到这个地方以后，就想，我既然入了党，怎么为群众办事。假如能给我一个历史舞台，我将用我毕生的精力去完成好我自己的责任。

WHX-LMF-01

吴：科技协会还是通过了一些风波，。。。我们的吃吃会，我们是自己出钱自己办，今天在他家开会，就在他家吃。都是自己办生活。当时我们还要交会费，当时协会没有钱，最少5块。。。。都是为了信念呢，都是为了把协会办好，为茶坪村的发展奠定基础，还有一个就是为了培养人才，还有产业发展，我们还搞过一个科协会员带3户的发展，一代三，当时有十几个人，就带30几户， 但是还是有些脑筋不大跟得上的，结果到现在还很落后。

吴：共产党员的话基本上条件都差不多。看看会章的入会条件。
彭：因为还要有无私奉献的精神。
吴：实际上到现在我们还是在做无私奉献。
刘：当会长到现在我从来没有拿来一分工资。

LMF-PRX-01

刘: 什么叫一个团体的价值，什么叫一个人的价值，什么叫团体的价值，就是奉献于他人，比如说共产党他就是一个团体，服务于他人，服务如全国人民。这就是共产党的价值，人生个人也是阿，奉献和服务于他人，这个就实现自己的价值了。
彭：人生观吗，就是人生应该有自己的目标和奋斗方向，人生观就基本完成了，那如果既没有奋斗目标，也没有自己的愿望，那肯定不叫人生观。

LMF-PRX-02

卢：你们这个科协和国家的科协有什么不同呢？

彭：国家的科协主要是科技创新，我们的科协当时主要是带动老百姓致富。

卢：是省或者县指定在这里成立的一个他们的分支是吗？

彭：不是的，我们当时90年成立的时候，当时有都江堰上面的科协，我们成立了这个科协之后就想报上去看看，最后他们要申报，就说准备成立一个农村的科技协会，带动老百姓致富。

卢：现在他们管理你们了吗？

彭：这个就要问会长了。。。

刘（现任科协会长）：是这样的，我们科协这条线呢是省科协，国家科协，都江堰科协这条线上管理的，但是（谁）管的不重要，重要的是能不能带动当地老百姓致富这个是最关键的。你老管理不重要，你老说搞不搞管理，但是没起到啥作用，那搞管理有什么用呢？这个科协在茶坪村20年了，起到了两大作用。一个就是培养人才，当时一个党员都没有的，到现在。。。我们科协走的是正路，你瞧我是2004年7月份入的党。。。还有比如我们这里修公路，修水管之类的，这些都经过科协，参与了发展。

LMF-03

卢：都什么人参加呢？

刘：村上的村民们，愿意参加的都可以参加。但是要写申请，考核，还要宣誓。已　经成立了有二十年了。还是属于民间组织。。。起到了对当地经济发展的作用，第二就是对人才培养的作用，一个季度活动一次。第一是思想，二经济，三是学技术。

LMF-PRX-03

彭：最大的一个突破点就是当年我们主要想做经济作物，这个要把全村的群众引导到这个路子上来，这个是一个不简单的事情。

刘：当时是如果你是科协成员，你就要一个带3个，3带九个，九带27个。就这样带起来了。

卢：有没有遇到过很大的困难之类的呢？

彭：有一个最大的困难就是缺少经费开支。这是我们最大的困难。因为我们的科技协会是民间自己组织的嘛，上面都不给拨一分钱的。

刘：我们没有向政府要，政府也没咋管我们。

LMF-PRX-04
卢：那这个科协起什么做用呢？
刘：推进这个村的发展。
卢：那和村委会有什么关系呢？
刘：协调。现在村联委都是我们科协的人。实际上我们是支部加协会，专门为发展经济的。农民要致富，有几条。一个是靠党的富民政策，第二要依靠科学，第三要依靠投入，第四要有超前意识。缺一不可。我们这个科协还有自己的会章，会徽，制度。现在又几十个人了。
彭:科协的年轻人是配合村上的联建工作。
刘：因为党的富民政策还是得在村支部和村委会的党委政府的领导下，一定不能拖离这个关系。
吴：而且国家政策的协调工作也很重要，不协调也不行，帮助村长书记进行协调工作。
刘：我们村上的领导都是我们科协的人，都像一家人了。在村支部和村委会，我们受他们领导，在科协他们（村上的领导）受我们的领导。是这个关系。现在村长和书记都是科协的人。

Appendix 3.9

Fieldwork Difficulties

The data collection process for my dissertation was far from a smooth one. I had to overcome multiple what seemingly to be un-surmountable field access issues back at the time. Initially, my interactions with the government branches such as the planning departments in Beijing, Chengdu, and Dujiangyan could best be described as courteous, if not at the superficial level. Some branch officials were willing to meet with me in person to briefly talk about the Wenchuan earthquake recovery from a very broad sense. On a positive account, these meetings were quite informational in terms of helping me grab hold of a general picture of how the technical side of the recovery process, particularly physical reconstruction, was being carried out in a rather orderly manner by the Chinese government both at the central and the local level. The other side of the account was that there was a general tendency for these officials to be very elusive or simply avoid talking about any aspect of the social recovery of the process. Because I was interested in getting to know the stories of how the government at the local level had actually dealt with or interacted with people on the ground to solve particular response and recovery issues, it was quite disappointing that none of them were able to or willing to describe that side of the account in an open manner. I got a sense of bureaucratic protection in terms of them knowing what to say and what not to say in front of different kinds of audiences. To some extent, this sense of elusiveness and reservation was the kind of response that I originally expected from government officials in China. However, when some of them went further to question the feasibility and motivations of my research, I was completely shocked. As part of any interview process, I had to reveal that the purpose of my fieldwork and research in general, which involved the social side of recovery after the earthquake. When I mentioned the term “civil society”, one of the Planning officials plainly told me that there were little or no civil society involvement and the tone of voice almost suddenly turned less friendly. Some even went further and started questioning the feasibility of this part of my research and the primary reason was that they thought there were almost no experiences to be told when looking at the local people’s perspective. To them, the recovery planning process and the administrative aspect of it remained to be a highly technical (architectural and constructional). Regardless of their discouraging comments and responses, I pressed on to keep finding ways to access the part of the story that only local people themselves were able to experience and describe.

As part of my original plan to discover the recovery experience from the perspective of the people at the local community level, I tried to gain access to one other village in Dujiangyan right after my stay at Chaping. Despite of the notification of the local planning department to the head of the cadre members of the village party system (村支书), I was publicly questioned by the party head of the legitimacy of my visit and the purpose of my research as a doctoral student from a foreign University regardless of my Chinese citizenship. I was persistent and tried to gain access to interview the village people themselves twice, and it was the second time around that the party head of the village became very hostile and pressed me to leave the site immediately. They even offered me a ride in one of their private vans. I refused and walked to get my own transportation means because all the encounters had left me with was a sense of complete disrespectfulness of human freedom. To a large extent, it was an extremely humiliating experience. For one, I completely did not expect that it could get this political at the local level when it came to discovering disaster recovery. For the other, when the intention of my research work was to reveal the experiences of the people on the ground for the possible development of policy processes that could benefit people who suffered from the impact of a catastrophic disaster, it became extremely disappointing when there was no trust in any sense and all that was left was complete cold encounters and hostility. It was at that very moment that I almost lost all of my motivations to continue my fieldwork. As I took the bus back to my hotel in Chengdu, I had to spend a couple of days to re-orient my whole purpose of my research at the time. Although so painful deep down from my heart almost to a point of despair, it was my persistent encounters with the local nonprofit social groups and organizations that led me to a sense of hope.

This hope not only manifested through the self-organizing activities in groups and organizations being recorded in the network analysis part of my dissertation, some of the most unforgettable actions done by the people on the ground can best be told through personal devotions often unrecognizable to the public eye. I met LY as I was distributing my network survey and she was the point of contact for the organization that she volunteered for on disaster recovery at the time. As we became acquaintances through exchanges of QQ messages and phone calls, she invited me to pay a visit to her at Shifang, a city in Sichuan that was significantly impacted by the 2008 earthquake. As her story gradually revealed, I came to know that she actually left her rather comfortable life-style in Guangzhou with her parents, spent all of the money from her savings to come to Sichuan right after she heard the news of the devastating disaster. All that she was thinking about at the time was to do whatever she could to help the people who suffered

so much from the earthquake in whichever way she could. Back at the time of my visit to her in 2011, which was already three years after the disaster, she seemed to be the only one volunteering for the NGO participated in the recovery process. Despite of the unbearable living conditions, she kept providing emotional and financial support for a local family that still wasn't able to move into the reconstructed housing units. Over time, she almost became a second daughter for the family. The part of her story that truly touched my heart was her passion in simply being there for others and being persistent in doing whatever she could to provide the type of assistance at the emotional connection level. Aside from the group and organizational actions thus being observed in the area of disaster recovery, the story of LY was also lived through a type of persistence and endurance at the personal level. To her, it was this type of the most intimate type of connection that could help people recover one family at a time. As we were walking down the muddy road with trucks carrying construction materials passing by leaving us with clouds after clouds of dirt in the air, I could care less about what was happening to the outside condition, my mind was occupied by the thoughts about her actions. If given the right circumstances, truly extraordinary things could happen at the very bottom-up level and that could form the primary manifestation of a type of capability to exercise agency freedom through human relations. The case for China however, was that such an opportunity came from the happening of an extremely distressed and life-changing event.

Appendix III. Chapter 4 Appendices

Appendix 4.1

In the findings from the qualitative studies, I later found that the disaster response and recovery actions triggered a third type of legal status. These are the civil society organizations that successfully got registered but without any government sponsors to oversee them. For this section of the analysis, I retained the original two-registration categorical system (state and business). As more organizations emerge with the new registration type over time, future studies can certainly be conducted to look at this issue more closely.

Appendix 4.2

First of all, the percentages and the counts in each of the categories were calculated by using the boundary of only 70 actors. This is done for the following reasons. Initially, 60 of the survey responses were counted as effective in reporting the information in disaster recovery activities. I then conducted a core-periphery analysis in UCINET to make some primary observations on those actors that are either more often being nominated by others or actively reached out towards others regardless of the direction of the ties. I found that 8 non-respondents were actually part of the core structure when actors were engaging in information exchange and communication during the response and recovery period. I therefore added them to the analysis. Their two-mode data were collected from online document review. The last two actors being included here are the aggregate state and the market sectors. I originally coded them in such a way that they were involved in all types of the recovery activities.

Appendix 4.3

Network Glossary Table (1)

Concepts	Definition
Attribute data	*Relate to the attitudes, opinions and behavior of agents, in so far as these are regarded as the properties, qualities or characteristics that belong to them as individuals or groups*
Variable analysis	*Refers to the methods appropriate to attribute data*
Relational data	*Relational data are the contacts, ties and connections, the group attachments and meetings, which relate one agent to another and so cannot be reduced to the properties of the individual agents themselves.*
Network analysis	*The methods appropriate to relational data*
Two-mode data	*Data describes ties between actors and activities. It involves two levels of analysis and describes which actors are affiliated with which macro structure. It is represented by case-by-affiliation matrix.*
One-mode data	*When case-by-affiliation matrix of the two-mode data are derived into two square matrices, one case-by-case matrix and one affiliation-by-affiliation matrix. They are called one-mode data.*
Degree	*Measures how well connected an actor is within its local environment while ignoring any indirect contacts it may have. It is a measure of local centrality.*
Point centrality	*Point centrality is calculated in terms of the number of actors to which a particular focal actor is adjacent, ignoring any indirect connections it may have.*
Local centrality	*An actor is locally central if it has a large number of connections with the other actors in its immediate environment.*
Global centrality	*An actor is globally central if it lies at short distances from many other actors. Such an actor is "close" to many of the other actors in the graph.*
In-degree (local)	*In-degree of an actor is the total number of other actors that have contacts directed towards it.*
Out-degree (local)	*Out-degree of an actor is the total number of other actors to which it initiated contacts with.*
Betweenness (global)	*Measures the extent to which an actor can play the part of a 'broker' or 'gatekeeper' with a potential control over others.*
Centralization	*Refers to the overall cohesion or integration of the graph. Graphs may be more or less centralized around particular points or sets of points. It measures the extent to which the cohesion of the graph is organized around particular focal actors.*
Density	*Describes the general level of cohesion in a graph.*
Adjacent	*It is when two agents represented by points are directly related or connected with one another.*
Complete state	*It is a graph within which each actor is connected directly to every other actor. All the actors are adjacent to one another.*
Inclusiveness	*It refers to the number of actors that are included within the various connected parts of the network.*
Neighborhood	*It is those actors to which a particular focal actor is adjacent*
Ego-centric	*An analysis approach that anchors social networks around*

	particular actors of reference.
Socio-centric	*An analysis approach focuses on the pattern of connections in the network as a whole.*
Distance (Geodesic distance)	*Distance between two actors is the length of the shortest path (the 'geodesic') that connects them.*
Compactness	*A distance-based cohesion measure.*
Diameter	*The largest geodesic distance in the (connected) network.*
Geodesic paths	*The shortest sequence of connections in a network from one actor to another where each actor and each connection are distinct.*
Maximum flow	*Measures how totally connected two actors are by calculating the number of different actors in the neighborhood of a source leads to pathways to the target.*
Embedding	*The various ways actors are involved in sub-structures in a larger network. Conceptualizing and indexing the various kinds of structures that characterize populations.*
Reciprocity	*Measures the extent to which ties are reciprocated. The proportion of pairs has a reciprocated tie between them.*
Transitivity	*Measures how social structures arise with regard to triad.*
Clustering	*Measures how actors are involved in local neighborhoods where most others are also connected to one another.*
E-I Index	*A measure for group embedding based on comparing the number of ties within groups and between groups.*
Weak component	*Weak component is a sub-group taking account only the presence or absence of a connection.*
Strong component	*Strong component is a sub-group of the network in which the lines of connection are aligned in a continuous chain without any change of direction. There is a possible flow of information in a constant direction without interruption.*
K-core	*K-core is a maximal sub-graph in which each point is adjacent to at least k other points: all the actors within the k-core have a degree greater than or equal to k.*
Girvan-Newman community structure	*An algorithm designed to identify cohesive subgroups.*
Clique	*Clique is a sub-set of a network in which the actors are more closely and intensely tied to one another than they are to other members of the network.*
Strong clique	*In directed networks, only the reciprocated lines are considered.*
Weak clique	*The directions of connections are disregarded. Only the presence or absence of a relation is considered.*
N-clique	*N is the maximum path length at which members of the clique will be regarded as connected.*
N-clan	*A way of restricting N-clique by forcing all ties among members of an n-clique to occur by way of other members of the n-clique.*
Structural equivalence	*A way of identifying the uniformities of action that define social positions. A role comprises of structurally equivalent category of agents as they do similar things in relation to similar others.*
CONCOR	*'CONvergence of iterated CORrelations'. It is the algorithm for investigating structural equivalence.*
Multiplexity	*The relation of one person to another is multiplex to the extent that there is more than one type of relation between the first person and*

	the second.
Multiplicity	*Multiplicity of a connection is a measure of intensity of a valued graph. It is the number of separate contacts which make up the relationship.*

(*Sources*: Hanneman and Riddle, 2005; Scott, 2000; Burt, 1983; adapted by Lu, 2003)

Network Glossary Table (2)

Components-related concepts

Concepts	Definition
Cyclic components	*A set of intersecting cycles connected by those lines or points that they have in common.* ***Weak**: non-directed graph* ***Strong**: directed graph*
Hangers	*Points that are connected to a member of a cyclic component, but which do not themselves lie on a cycle. Hangers simply 'hang' on to a cyclic component.* ***Hangers-on**: hangers that direct a line towards a member of a strong cyclic component.* ***Hangers-off**: hangers to whom a member of the component directs a line.*
Bridgers	*The points that are 'intermediaries' or 'waverers' between two or more cyclic components, but which are not members of any of them. A bridger, then, 'hangs' on to two or more cyclic components.*
Isolated trees	*Chains of points (including dyads) that are not connected to any cyclic component. The members of these 'trees' are linked to one another in a non-cyclic way.*
Isolates	*Points that have no connections at all. Degree=0*

(Source: Scott, 2000, p106; Adapted by Lu, 2013)

Appendix 4.4*A*

Sample of Ego-network Actor Brokerage Measures[244] (Communication)

Pre-earthquake

GOULD & FERNANDEZ BROKERAGE MEASURES

```
Input dataset:                          NGO info commu_pre_earthquake_Rr
Partition vector:                       "C:\Users\admin\Documents\Disser
Method:                                 UNWEIGHTED
Normalized Brokerage:                   relativebrokerage (C:\Users\admi
Unnormalized Brokerage:                 brokerage (C:\Users\admin\Docume
Warning: Attribute vector has been recoded.

Here is a translation table:

  Old Code     New Code    Frequency
  ========     ========    =========
         1   =>        1           42
         2   =>        2           10
         3   =>        3           18

Number of classes: 3

Un-normalized Brokerage Scores
```

		1 Coordinat	2 Gatekeepe	3 Represent	4 Consultan	5 Liaison	6 Total
2	100	7	5	23	8	9	52
50	61	3	10	13	10	10	46
16	119	3	15	12	16	12	58
6	106	0	0	2	1	2	5
10	110	0	0	0	0	0	0
47	53	0	0	0	0	0	0
32	24	0	0	7	3	3	13
49	6	0	0	0	0	0	0
70	97	0	0	0	0	0	0
25	134	0	0	0	3	2	5

```
Legend: (given flow 1-->2-->3, where 2 is the broker)
      Coordinator:  A-->A-->A  (all nodes belong to same group)
       Gatekeeper:  B-->A-->A  (source belongs to different group)
   Representative:  A-->A-->B  (recipient belongs to different group)
       Consultant:  B-->A-->B  (broker belongs to different group)
          Liaison:  B-->A-->C  (all nodes belong to different groups)
```

[244] The brokerage measures from UCINET were analyzed based on 70 core actors in the communication network.

Appendix 4.4*B*

Sample of Ego-network Actor Brokerage Measures (Communication)

Emergency Response

```
GOULD & FERNANDEZ BROKERAGE MEASURES
------------------------------------------------------------------------

Input dataset:                          NGO info communication_emergenc
Partition vector:                       "C:\Users\admin\Documents\Disse
Method:                                 UNWEIGHTED
Normalized Brokerage:                   relativebrokerage (C:\Users\adm
Unnormalized Brokerage:                 brokerage (C:\Users\admin\Docum
Warning: Attribute vector has been recoded.

Here is a translation table:

  Old Code     New Code    Frequency
  ========     ========    =========
     1     =>     1           42
     2     =>     2           10
     3     =>     3           18

Number of classes: 3

Un-normalized Brokerage Scores

                1         2         3         4         5         6
          Coordinat Gatekeepe Represent Consultan   Liaison     Total
         ------------------------------------------------------------
        ------------------------------------------------------------
 2 100 |         6        12        13        17        15        63 |
50  61 |         6        29        39        53        46       173 |
16 119 |         5        13        15        15        14        62 |
 6 106 |         0         0         2         0         2         4 |
10 110 |         0         0         0         0         0         0 |
47  53 |         0         0         0         2         4         6 |
32  24 |        16        97       166       280       309       868 |
49   6 |         2         6        13         7        19        47 |
70  97 |         0         0         0         2         4         6 |
25 134 |         0        14         2        47        31        94 |
        ------------------------------------------------------------

Legend: (given flow 1-->2-->3, where 2 is the broker)
      Coordinator:  A-->A-->A  (all nodes belong to same group)
       Gatekeeper:  B-->A-->A  (source belongs to different group)
   Representative:  A-->A-->B  (recipient belongs to different group)
       Consultant:  B-->A-->B  (broker belongs to different group)
          Liaison:  B-->A-->C  (all nodes belong to different groups)
```

Appendix 4.4*C*

Sample of Ego-network Actor Brokerage Measures (Communication)

Recovery

```
GOULD & FERNANDEZ BROKERAGE MEASURES
------------------------------------------------------------------------

Input dataset:                          NGO info commu_recovery_70 acto
Partition vector:                       "C:\Users\admin\Documents\Disse
Method:                                 UNWEIGHTED
Normalized Brokerage:                   relativebrokerage (C:\Users\adm
Unnormalized Brokerage:                 brokerage (C:\Users\admin\Docum
Warning: Attribute vector has been recoded.

Here is a translation table:

  Old Code     New Code    Frequency
  ========     ========    =========
         1     =>     1           42
         2     =>     2           10
         3     =>     3           18

Number of classes: 3

Un-normalized Brokerage Scores

                    1         2         3         4         5         6
              Coordinat Gatekeepe Represent Consultan   Liaison     Total
             ------------------------------------------------------------

            ------------------------------------------------------------------
  2 100     |         1         7        13         5         8        34 |
 50  61     |        10        20        51        33        43       157 |
 16 119     |         6        16        34        24        25       105 |
  6 106     |         0         0         1         0         1         2 |
 10 110     |         0         0         0         0         0         0 |
 47  53     |         0         0         0         0         3         3 |
 32  24     |        16        59       104       120       124       423 |
 49   6     |         8        20        36        51        55       170 |
 70  97     |         0         4         0        10        14        28 |
 25 134     |         1        14         8        41        12        76 |
            ------------------------------------------------------------------

Legend: (given flow 1-->2-->3, where 2 is the broker)
      Coordinator:  A-->A-->A  (all nodes belong to same group)
       Gatekeeper:  B-->A-->A  (source belongs to different group)
   Representative:  A-->A-->B  (recipient belongs to different group)
       Consultant:  B-->A-->B  (broker belongs to different group)
          Liaison:  B-->A-->C  (all nodes belong to different groups)
```

Appendix 4.4.01*A*

NGO51-01-01

就是要看服务人群的多少和场地的面积。比如说他的服务面积大，比如说一两千平米，开展的服务比较多一些，比如说一两个社会组织开展活动的涵盖面不会那么广，特别是灾区的需求是多样性的，一两家组织不可能就提供了那里（灾区）的需求。那么这个时候就需要我们联合多家社会组织一起到一个点上开展活动。那么我们的协调和配合就特别重要，所以我们必须在里面起一个平台搭建的作用。(NGO51-01)

Appendix 4.CaseNGO51.1

NGO51-01：NP (NGO51)其实是在上海2006年就成立了，它是在上海，北京，深圳，都有点，在成都这边就是因为512的时候才涉及到这块，所以才介入进来。我们现在在成都也是独立注册了的，是一个独立的民非组织，前期在成都这边还是做的孵化器的项目，到了09年的时候才作社区服务这一块。我们第一个项目其实就是孵化器的项目,培养其他的一些初创期的社会组织，到了2009 年的时候 就有诺基亚的这个项目进来，在这里建16个社区中心。

卢：这16个社区中心你们怎么选的呢？
NGO51-01：当时有几个方面的考虑，一个就是考虑到受灾情况，我们基本上都是在 512 重灾区选点，第二个就是考虑到当地实际的一个情况。其中就包括场地，考虑到当地有没有这样的资源。而且要跟政府去洽谈，看他们愿不愿意提供这样一个场地来供我们进行社区服务。还有一个就是跟当地的安置情况也有关系。512 之后修建了很多集中安置区，有些是看它的人群的覆盖。比如说有的点上大概有几十户，有的地方稍微多一些，根据这些综合判断来选择这 16 个点。

卢：那你们怎么开展服务的呢？
NGO51-01：16 个点的话，我们就是分成了大中小， 就是三个大型中心，三个中型中心，和十个小型中心。 那么在操作模式上是这样的，十个小型中心就是基本上完全交给第三方的社会组织来开展服务，我们基本上就是提供一些资金和技术上的支持就可以了，他们在操作中遇到的一些问题我们都会帮助他们来运行，小型中心运行的模式基本上是这样的。那么像中型中心的话，也会有第三方的合作组织引入

进来，我们会协助他们一起去开展工作，就是我们可能会有工作人员协助他们一起去开展活动。就是协助的力度会比小型中心强一些。

卢：那您能给我举个例子吗？
张：像我们北川那个点吧，我们主要就是引进了 3 家社会组织在那里开展活动，那我们主要给他们提供社区的需求，那么我们前期介入的时候，作社区需求的调研的时候，会把信息整理出来看这个社区到底有哪一方面的需求。 按照轻重来筛选社会组织，比如说老年人服务这方面特别需要，那么我们就会去找专门为老年人服务的社会组织，引入进来，让它来开展社会服务。那么这个方案的撰写呢可能需要我们和他们一起来完成。像其他的需求就要找相应的社会组织来完善。而且我们找的基本上都是当地的和周边的社会组织，因为他们在当地的操作和运作可能比我们要更方便一些，而且它也会对当地更加熟悉，运作起来的成熟度会比我们快。

Appendix 4.4.01

从大体情况来看，现在很多合作都分区域，区域性很强，业务上的合作我认为还不够。其实，除了灾后重建这方面，深圳的ngo网络作的很好，平时业务上的联系紧密，政府的制度环境也很好。 要真正做好防灾减灾的工作，一定要专业，热情和好心需要一个很好的应急机制来调度。 (NGO24-01)

Appendix 4.4.02

我了解并进入公益组织也是因为搞青年志愿者项目的时候，就是在他们（G 老师）搞第三期青年志愿者项目的时候，我有一个好朋友，她是那期那个项目里的志愿者，我就经常过去参加他们的一些活动，或者做他们那个项目的志愿者，然后了解还有认识了一些人，其实之前我对这个圈子的了解不是很多，地震一开始的时候我在医院那边做临时志愿者，后来就是我们项目的其中一个负责人给我打电话，说这边需要人帮忙，我就过来了。大概是在 16 号的时候，那时候那边不是有很多运上来的伤员马，当时我陪护了一个女孩，陪了她 3 天。（SG3-01-01)

Appendix 4.4.03

SG3-01-02

“I was particularly in charge for the information aspect of the work, because we used to have an online blog on “cn” and I assisted in posting some of the information there. At that time, I posted a lot of this type of information on all kinds of the online forums. So we gradually engaged in the information aspect of work. We were also engaged in material supplies, but that was not our main focus. If we received a large amount of donated material supplies and there was a need for such and such somewhere, we would send them over directly. So we had to coordinate for transportation arrangements, such as making connections with citizen volunteers here in Chengdu and our friends in other (NGO) organizations. By the time when things were basically settling down, we decided to keep focusing on the works related to information and communication because we became familiar with the people working in the field by then.”

“我那时候主要负责的就是信息的这方面，因为最早我们在 cn 上面有一个博客, 我就帮助发表了一些信息，那时候我就到处到各个论坛去发这样的信息，慢慢的我们就主要搞信息的这一块，物资也在做，但不是主要的。那时候如果我们接到最大的一笔东西（物资）, 如果那个地方需要什么什么的，我们就直接会给运过去，这样的话就需要联系车啊之类的，当时就联系了很多成都的市民志愿者和其他机构认识的一些朋友阿，后来陆陆续续就定下来了做（联系）这块，因为这块人也比较熟了嘛，后来就一直做这个工作了。”

Appendix 4.4.04

SG3-01-03

因为我那时候也是刚毕业没有多久，还是不太定性的那种，觉得在媒体做得东西还是有一点点失望吧。 （后来参与到这里来）觉得这里是以自己没有接触过的领域，就觉得这个圈子里的。。一方面觉得做的事情是蛮有意思的，另外还觉得这里的人很多都很有意思，怎么说呢，都是个体很鲜明的那种。不是说一眼看谁都是一样的。我刚开始认识 LSJH非政府组织的YX老师的时候，因为一开始只是在报纸，新闻，报道里面听到过他的名字吗，一下子接触到真人了，尤其是跟着他们做事情的时候，就觉得啊，还是蛮不一样的。其实一开始的时候倒没想那么多说一定要做多久阿之类的，也没有什么长远的规划，就觉得现阶段这个事情我还蛮感兴趣的，而且很有冲劲儿去做，所以说慢慢就做下来了。

Appendix 4.4.05

SG3-02-01

。。。就我们来讲，反正我们日子过得下去嘛，已经到了这个年纪了，也不想做生意，也不想发财，就想做一点对社会有用的有好处的事，对社会发展有一点促进作用的事，就可以了。没有，什么都没有，不要把这个事情看得好像挺怎么样的，

SG3-02-02

。。。本来我们这个社会是一个健全建康的社会，人人都应该具有的一种很平常的一种东西，其实它仅仅符合一种叫什么呢。。。道德底线吧，其实就是一种道德底线，我如果有钱，我不拿出来捐出来，那我道德上就有亏损，对吧。这个是在一个健康的社会里，这个是一个最基本的一个道德底线，一个行为准则。没有什么特别不得了的东西，没有。其实我们这个社会太堕落了以后呢，他们太低下，实在太低下，这两种境界一互相比较呢，可能差距大了一点。无非如此而已。 (SG3-02)

Appendix 4.4.06

SG4-01-01

“Due to the significant loss of housing after the earthquake, the loss of rural and urban residential housing amounts to 27.4% of the total loss. This resulted in significant loss of labor for housing reconstruction in the disaster area and many of the residents there were not able to go back to normal daily lives, thus losing their confidence in their future lives. We hope to provide our volunteer support to the group of residents whose lives were significantly impacted by the earthquake. And our focus of support will be helping those families rebuild their homes, so that they can start their new lives and thus lighten up their hopes to live their lives.” (SG4-online source)

由于在地震的损失中房屋的损失很大，民房和城市居民住房的损失占总损失的27.4%，震后恢复重建中灾区劳动力严重缺乏，导致灾区同胞迟迟不能回复到正常的生活中去，很多人因此对未来的生活丧失信心。我们希望通过为灾区提供无偿人力援助的形式，支持和帮助那些在地震中受灾比较严重的灾民，援助重点是一些缺少劳动力的受灾家庭、因灾致残人员家庭和困难家庭，使他们在灾后更快地恢复家园，开始新的生活，并能通过这样的形式改善他们的精神面貌，点燃他们好好生活下去的希望.

Appendix 4.4.07

SG97-01-01

因为地震搅动挺大的，我身边的朋友都是专业人才，所以都会参与到或者是医疗救援或者是援助中，所以大家因为这个事件都会被拉进来了，不管你是愿意还是不愿意，你都会被牵扯进来。也会有很多精力和时间去投入到里面来。

Appendix 4.4.08

SG97-01-02

开始时大家都在做，但是并没有想说一定要把它做成什么，就觉得那种方式也挺好，因为我之前也在做这块相关的，后来觉得做这块也挺有意思的，作一个自己更想做的方向，然后我自己写了一个项目申请，正好（资金）也批下来了。因为自己也蛮想做会社区这个层面的。它（恩派）也很人同这里理念，就批下来了。所以我就想着是一个很好的单独作这个的机会。

Appendix 4.4.09

SG97-01-03

就是做到后来有机会想申请做回城市社区，是因为我觉得人的救助，包括灾后其实是分很多层面的。像我们前期作了很多，包括是好是坏的吧，不管是援助也好，救助也好，好像所有的精力都关注到一个就是在灾区的人群上，但是实际上当时发生地震的时候我也在成都阿，当时也有跑啊，也有逃阿，所有的人其实也都经历了那个过程的。也包括那些警报阿之类的。大家都有这样的体会。

所以其实并不是重灾区的人才是必须要关注的，才是灾民，或者说也不一定要扣这个帽子说叫“灾民”，这个需要的话所有的人都需要，包括社区里面。因为我们在普通的社区会发现很多其实是缺失的嘛，就是到目前为止，比如说，大家也不知道紧急情况怎么跑，怎么救助，然后生活中我们认为也许应该是知道的但是是不知道的紧急救助的东西，其实大家都不知道。 还有生活中很多常识性性的很基础的，其实大众这块石缺失的。比如说最简单的，如何正确的洗手很多人都不知道。所以就是说有很多类似这种观念的缺失，所以我可能更愿意到这个普通的人群里面，我觉得那个人群（在灾区的）现在关注的人也很多，比如说还在灾区的，政府的投入也越来越大，效果肯定也是也来越好，那我就觉得我可以把我的经历转回到大众一点的社区里去做

Appendix 4.4.Case97.1

卢：你们是因为地震的原因，后来 就做这个了吗？

汪：其实是地震的一个触动把，原来我们也帮忙做一些辅导和咨询阿之类的，但是也没有把这个定位成一个专门的事来做，只是生活的一小部分。地震以后，自己又在做这种地震相关的专职的工作，所以其实是改变挺大， 因为不光是我，还有我们团队的还有亲戚和朋友，就是自己圈子里的朋友，。

Appendix 4.4.10

SG97-01-04

然后我想，更多的时候救灾我觉得在我们这个层面上就是一个应急事件而以，但是应急事件并不止限于这一个事件。很多时候在我们的生活当中都会遇到同样甚至于更困难更严重的事件，那应急事件的处理和你的应对的方式其实是更重要的。所也我更愿意做社区就是说我不仅仅只在地震震灾这个大的应急事件，还有就是大家在生活中都会去面对的不同的可能对各人来说更重要的应急事件，那么我们应该怎样的去面对，应该怎样建立一个社区的支持网络，在社区的层面怎样去做社区建康对我个人来说是我更倾向于选择的方向。

Appendix 4.4.11

SG97-01-05

（卢： 你刚才提到地震中改变很多人，你觉得都改变了人的什么呢？是公益思想被激发出来了吗？）

汪：其实改变有很多层面，比如说你做为一个普通人的改变，因为你经历 了这个事情，每个成都人都经历了逃地震，从楼上往下跑，包括躲地震那几天的通知，然后住帐篷，都经历了。这是生活中一个重大事件，所以这个会对你的生活和观念都会有个触动和改变的，即使我不参与救援，但是我经历了这个事件的本身，我也是会改变的阿。很多人会从新去思考说我自己的人生需要怎么去考虑，我将来的发展要怎么去考虑还是有很多的。这个就是即使我不参加公益，我经历了这个事都是会有改变的。

然后第二个改变就是说有一些人，像我们身边的一些朋友，因为是专业性的人才，所以会更多的被参与到，不管是主动还是被动，灾后的救助的过程中。那你就亲身经历 了这个过程了。你在成都市这个样子，你去灾区又是另外一个样子。参与了这样一个过程其实对自己也是一个很大的改变。不管你是做专职还是做兼职，都是在做志愿者，只要在那个过程中参与了，那就不一样了，所以包括我身边的一些朋友到现在还在兼职做志愿者，还是在做。就是说这也是一种改变，行为的改变，生活安排得改变，他愿意安排这样的事件来做这样的东西，这样也是挺好的。包括四川整个志愿者的发展也是跟这个事情（地震）功不可没的。就是这么多人开始了解

做志愿者，把它当成一种生活的方式，不一定做专职马，包括也有部分人像我自己就做一名专职的公益机构的工作人员直接专门去做这个板块，那也是改变。

Appendix 4.4.12

NGOLF-01-01

当时是很多人都有这样的想法吗，当时是出来很多人和很多小的团队，当然很多就散了吗，但是因为量太大，还是留下了一批人，他们始终觉得要去做这样的事情，不管是在灾区。我也知道有些人，他们回到自己的外省或者家乡去，他们就一样的在做类似的工作，反正都成为了一些比较活跃的人了。我们要做的还是与灾后重建相关的工作，因为我们也是给他们起一个交流的平台，或者给他们提供一些培训阿，或者交流的资源。

Appendix 4.4.13

NGOLF-01-02

卢：您这里是什么时候成立的呢？

彭：登记证上写的是去年年底的25号。但是具体成立的时间倒也说不清楚。像我们这里，只能说是每一个人的。比如说你问他你们怎么成立的，他只能告诉你是哪天到四川来的。 反正基本上的模式是这样的，就是乱其八糟的一堆人，这样那样的，慢慢的就有一些小团体了，

Appendix 4.CaseNGOLF.1

卢：现在一共有多少个小团体跟你们联系上了呢？

彭：通过我们给他们提供一些训练服务的，因为我们一般的模式就是我们向他们发出通知，然后它愿意派人过来，如果说这种模式的话，那就是相当的多了。基本上灾区大大小小的，只要它是做青少年方面的服务的应该都跟我们有一些接触，这种就很多了。长期的合作的还是有十几个或者二十几个。

Appendix 4.4.14

NGOLF-01-03

网络是起了不少的作用。从一开始网络就起了不少的作用，这个是很明显的，包括从我个人 来讲，我在地震以后觉得想去做点什么，但是你不知道怎么去阿，然后就到 QQ 上去看看。当然在这个过程当中就逐步的接触到很多人啊，有的人就是专业做这个事情的，比如说香港台湾过来的，在这种间，有很多国外的顾问的指导，他们就会给我们 从意识上有一些系统的认识，还有像台湾的组织，很多都是 921 地震搞作游戏之类的，他们就会派老师过来指导说这个游戏怎么做。

Appendix 4.4.15

SG3-03-01

因为在当时那个情况下，其实需要我们去做的事太多，但是我们能够做的事情是什么，我们这几个人平时大家都很熟了，德贤，田军，都是好多年的合作伙伴了，彼此都很熟悉，当时 512 成立的时候，多数人是相互之间很熟的人，或者是项目的合作，或者是平时的交往合作，都比较熟悉，这个跟 ZGY(NGO49-01)他们就完全不一样，ZGY 到后来连他们队里的好多人的名字都不认识，就是过去根本就不认识。素不相识。在一个特殊的情况下凑成的。这是这两个机构一开始就非常大的不同。他们那里情况就不太一样，多数人都不认识，少数人是相互认识的。我们这里呢就是多数人相互认识，彼此之间。所以当时我们当初刚一上来，我就记得其中有一条就是我们不和完全陌生的人有更紧密地合作。就是我们的合作伙伴因该都是我们熟悉的，完全我们不熟悉的人一般来说就不会。

Appendix 4.4.16

SG3-03-02

还有一个就是我们不做筹款和募捐这个活，好象当时大家也有个意向不做，这是因为当时我听张国远他们说他们都是几个车皮几个车皮的调东西，我们既没有这样的人里也没有这样的资源，而且也没有钱，说实在的自己的机构当时都没有资金，当时在这个会议上就是有两家机构说可以来提供一些必要的资金支持,。。。所以这样的话就是我们没有这样实际工作的这样的人才也没有这样的资源，所以我们就不做物资。

Appendix 4.4.17

SG3-03-03

我们觉得当时我们能做的事，一个就是信息服务，觉得这个是最重要的，因为。。。你想吗，包括像万科的这些都到我们这里来了解信息，所以我们就要做信息，作信息资源。包括物资，物资来怎么办。当时我们也确定了一个点对点，比如说我现在在向峨，那里急需棉被，那么外面的棉被来了，你这个机构在这，你就直接点对点，直接过去。不是通过 512 这个地方来中转，这个也是当时我们定下来的，我们这里是一个信息平台，我们只是说张三要，李四有，那么你们俩张三和李四自己去联系。但是我们这里是负责发布信息，谁要谁要，所以你会看到我们这里从一开始更多的还是一个信息的调配。当然还做了其他方面的一些活。然后就是每天上午有一个信息发布会，很多 NGO 都到我们这里来通过我们聊解现在哪里地方可以去，哪里交通不好。当时他们还介绍，有一个车行俱乐部，他们的车，关键是他们的车都有车载电台。这个是消息非常灵便的。所以他们就可以知道，比如说我们现在已经到了什么什么村了，这个地方现在没有任何救援队来，这里需要水，需要食品，那好，刚好我们那里也源源不断的也来，外地的也来，北京的，上海的，广州的，那里的都有，那好，你们这个团对上那里去，他们这个团对到这里去，刚好来的人，反正我们这里有信息，然后你们就自己去。然后都是自己的这种联系，这么一个运作形式。 那一直差不多就这样运作了，到了 5 月底的时候，情况也都相对稳定了。

Appendix 4.4.18

SG3-03-04

我记得还有就是我们第一天就提出来的一个很重要的就是要“有序参与，有效服务”。这是我们自己的一个口号，我们自己的宗旨。而且当时我们确定的要做什么就是说，作为 512 中心来讲，它不直接到灾区，也不直接面对灾民，我们的服务对象是 NGO，是到灾区去提供服务的 NGO, 这也是我们一开始就确定的。512 中心的定位，自己定的很清楚。我们不是一个救灾的组织，不直接面对灾民，也不直接面对灾区。就是给到灾区去救灾的这些 NGO 提供服务。这一点就是从一开始到现在（都没有变的）。

Appendix 4.4.19

SG3-03-05

我们的想法就是只要还有 NGO 在灾区工作，那么我们这个机构按说它就应该生存下去。因为你想，有好多机构都是刚起来的。又在灾区，要通过这里来，那么一些信

息的传达，包括像我们这会有各种各样的他们要来开会阿，办班阿，临时在这里办个工阿，这种都有的。
如果没有 NGO 了，那我们工作就结束了。也没有考虑过转型。这个也是要根据情况来说。因为目前来说需求还是比较大。现在才刚刚三年，你像我们在台湾，在日本，十多年了，还有，还在做，灾后重建还有，而且这个工作也停不了，更何况我们这里灾情更重，对吧，面积更大，我们觉得这也是一个相对长期的工作。　所以这三年多我们也算是相对比较稳定。通过我们的网站提供服务，还有日常的这种服务。(SG3-03)

Appendix 4.4.20

SG3-01-04

每天早上得这个例会大概到了五月底的时候，最紧急的阶段已经过去了，比如说救人啊，这样的阶段已经过去，那个紧急阶段的时候，我们大家都是一起来做事情的，没有说是分你是哪个机构的，但是紧急阶段过后， 大家也会回到自己原来的工作。比方说像有的机构，它们就会考虑马上就要开始的后续工作中他们可以做哪方面的事情。是做生计方面的还是做信息服务之类的。
其实 512 中心他就相当于大家自发形成的这样一个东西，但是在这个时间点上的话，大家就要考虑，。。。我们那会儿也开大会讨论过这边还有没有必要进行下去。当时大部分伙伴的意见就是这边还是有必要进行下去，一方面就是说有了这样一个通联的平台就很好的（促进）大家之间的联系。另外一个方面就是说在这样一个基础上资源不管是信息还是过来的一些一些资源阿这样的协调会做起来比较方便。其实这样一个事情，我觉得，让四川这边的本地的 NGO 之间的关系和交流的氛围相比较来说好一些。现在有了这样一个契机，其实是一件好事。能够让大家有更多的联系，不管是合作阿还是只是情感上的这种。

Appendix 4.4.21

SG3-01-06

就是那个一开始的时候，大家都是很有热情的去做这些事情的，但是当中还是会有一些问题。我觉得像郭老师他们毕竟长期做这样的一些事情，会有一些先见之类的，另外还有一个就是他们认识的高度。那会我们提出就是我们是政府的查缺补漏，就是说我们做的事情肯定是小坨的，是政府可能注意不到的在那个紧急的时期。还有一个就是。。怎么说的。。。政府领导，我们是参与协同的那种。还有一个他们比

较注重志愿者着一块嘛，就是说你们是来把事情做好的，你们是来做好事的，然后就做了一些很简单的志愿者培训大纲，就是给在安置区来给志愿者发放，也给他们做简单的培训。

Appendix 4.4.22

SG3-01-05

“One is because there they had a larger area of office space, those spaces that belong to actor #25 were actually part of the water authority inside the local government branch. Since some of the government offices moved out that building, and also on the science and technology association whom the actor had a good working relationship with. So they were able to use the space long term. At that time, half of the entire third floor of that building became our activity venue. That space was big enough to handle large amount of people and different kinds of activities. There were also a large number of organizations that came from other cities soon after the earthquake, such as those from Shenzhen, Shanghai, and Beijing.

At that time, we were divided into several teams. For example, we had information team, action team, logistic team, and we also had what was called the ‘In-door Volunteer Team’. Because a large number of the wounded victims were transported into Chengdu back then, and they would mostly concentrate in hospitals or temporary resettlement areas. So like our organizer G and some other team members from the youth volunteer program would go to those locations to provide some brief training for the volunteers there.

一个方面是因为他们那边办公的场地要大一些，(Actor #25)那边的办公室是属于水务局相当于政府的一个部门，他们不是政府的大楼都搬走了吗，那栋楼就空下来了，刚好科协那边，他们跟科协的关系很好，所以就长期在用那个地方，有三楼的一整楼有一半都是可以作为我们的活动场地的。不管是人员阿，工作啊，地方比较大。在那里当时也有很多外地的机构， 有很多外地的机构很快就过来了。有深圳的，上海的，北京的。在那会的时候，我们大概就是分了几个组，有信息组阿，行动组阿，后勤组阿，还有我们叫室内志愿者组。因为当时不是有很多的运下来的伤员马，会集中在医院啊或者是安置区那样的地方，像我们的郭老师和青年志愿者项目的几个老师就会集中在那些地方给那些志愿者做一些很简短的培训。

Appendix 4.4.23

SG3-01-07

就是因为我们这个机构的基础就是很多的机构，很多的 NGO 伙伴，他们本身会有自己的资源或者自己的合作伙伴，或者是自己的志愿者，慢慢的大家就都知道了，就都来这个地方。然后我们在网上也会发布这样的信息，毕竟我们的（信息） 是第一手的和及时的信息。大家知道的就过来了。当时我们每天早上九点都有一个例会，我们的各个小组都会汇报说你们小组今天最主要的信息是什么，今天走到哪里了，人员的安全情况阿之类的。
我们后面做的有很重的一块工作就是协助其他一些机构，不管是研讨会阿，培训阿，活动阿，有很多，它们只需要提供师资，我们会为他们做其它所有的事情，比如说这个会是针对项目的财务管理的，或者是灾害管理的培训，或者是环保之类的，我们好像是有这样一个伙伴的资源库一样，我们会根据他们的要求也会想一想给他们邀请合适的工作伙伴来参加，然后我们会给他们做整个的会务的这一部分。到后面其实这部分的工作还蛮多的。

Appendix 4.4.24

SG3-01-09

“We all think that during the later on disaster recovery stage, our NGO capacity-building and our own growth became very important. This is because only when those local groups/organizations grow and ‘mature’ would they are able to conduct their work long term in the area. That is why we had actor #118 to support our program in developing our study and training platform. This program so far has not occurred to be one providing practical skills, such as not focusing much on things like financial management training for NGOs. Up until now, we have organized five phases of training activities with one per month, and most would concentrate on raising our participants’ awareness…for example, our first training lesson was about ‘civil society’, then about ‘social gender’ (社会性别）， and inviting college professors to teach us on NGO management…so all maybe more at the level of awareness. But according to the current participation rate and the feedback, these are some of the necessary lessons. What impressed me the most was through our platform, we would pass on a concept of ‘sharing’. It did not matter whether it was your resources or experiences, or even the difficulties and lessons learned, all can be brought about to openly share with others. Maybe it is only an act of sharing the things you’ve gone through, but for other partners, it would be a valuable lesson for them to

learn. These things are very important (to groups/organizations), especially for one of those participating in our training platforms…they are called Leshan QQ volunteer team', and they were actually registered. Every time that organization came by, they would choose a different person to come for the training, and that way, everyone in the team would have a chance to learn and grow."

大家就觉得在后面的这个灾后重建的过程中，其实 ngo 组织自己本身的能力建设和自身的成长也是非常重要的，因为只有当地的他们成长起来了，才更可能长期的在这个地方工作下去。所以说我们就有了乐施会支持的那个学习支持平台的项目。这个项目到现在看来到不像是一个实用的技能性培训，就是说我们没有针对项目的财务培训阿之类的，我们到现在作了 5 期活动，一个月一期，可能更多的是意识上的培训，比如说我们第一期做的就是公民社会，后来有关社会性别，还有请学院老师给我们讲 ngo 组织的管理，可能更多的是意识上的东西。但是从现在人员的参与度和大家的反馈来说，就觉得这样的东西还是非常需要的。我印象特别深的一点就是，这边可能会给大家一个很好的概念就是分享，不管是你的资源还是经验，甚至是你的项目的教训这些都可以拿出来分享的，也许你只是拿出来了，但是对于其他一些伙伴来说它就会少走很多弯路。这个东西是蛮重要的，尤其是像参加我们学习平台的一个机构，它们叫"乐山 qq 群志愿者团队"，它们是注册了，他们这个机构每一次都来，但是每一次来的人都不一样。他会让他们机构每一个人都会有这样的一个学习的机会。

Appendix 4.4.25

SG3-01-08

后来到 09 年 10 年的时候，我们有两个比较大的倾向，其实还是做服务的马，不管是信息还是联络阿，协调阿什么的，后来慢慢的会发现在地震之后会有更多的更草根的一些机构产生了。就是在当地产生的。也许是外地的人在那个地方一直做志愿者活动作了也是快 3 年了，在四川灾区。）
（有一种就是，其实他们还没有 ngo 组织的这种概念，就是还有点像志愿者团队的那样，觉得自己还是做得志愿者的这种活动，还有一种就是，其实 ngo 组织的一个工作理念就是还是希望在他们离开了之后这个地方有自己的力量可以起来，也许是他们有意识的培养了当地的一些骨干。成立了这样的一些组织。这个部分灾后出现的非常多。

Appendix 4.4.26

NGO49-01-01

当时联合办公室它有分工，我这块呢我主要负责筹资和一些日常的管理，比如说运输队和调查队的调动阿，还有物资仓库的募集阿都是由我来负责。 那么下面还分了几个组，每个组有不同的工作任务，有的是作前线调查的，有的是做灾情调查的，调查之后他们会有反馈，有的需要人去，有的需要物资，我们就根据他们的需求来调度我们的车辆阿，物资阿，还有人员。 反正大概紧急救援阶段就做了这些事情。那这些事情大概是作到了大概是 5 月 30 号巴，联合办公室的紧急救援工作就结束了。结束了之后，当时我的想法就是说，因为当时参与的民间组织还比较多，我想地震的紧急救援阶段结束以后呢灾后重建应该是一个非常漫长的过程，因为这个也是跟据日本和台湾的经验。所以当时我就想还是留下来做一些长期服务的一些灾后重建工作，所以那个时候我们就有想法，就想干脆把我们的总部也搬到成都吧。把名字也改了.

Appendix 4.4.Case49.1

。。。因为当时在攀枝花注册了，到了成都又得重新注册，所以这个名字听起来跟地震好像也有点关系吧，反正这个名字也是当时我们在联合救灾办公室的时候大家在一起一时兴起，无意间就这么说的，后我想想这个还很有纪念意义，干脆就用吧，就这样子，备灾中心就成立了，是2008 年6月1号。差不多它的起源就是这个样子。（ＮＧＯ４ ９－０ １）

其实我们这个备灾中心成立是在 2008 年，但是这个团对有很多年的历史了。从 2005 年开始这个团对就开始做一些关于公民社会的这样一些事情，只不过之前不叫备灾中心，叫令外一个名字，后来是因为 08 年地震的时候，那时候正好碰上了国内的 ngo 当时就推选了我来做四川 NGO 的救援办公室的总协调人，相当于总指挥吧，来做这个紧急救援。当时我们国内大概是 100 多家吧，参与然后成立了一个联合办公室，过得比较久了，我要想一想，

联合办公室当时是 5 月 13 号或者是 5 月 14 号成立的，成立了之后，我们就决定这个联合办公室要怎么做，最后我们大家的一个商讨结果就是还要做具体的救援行动，比如说紧急救援的物资的发放和救灾志愿者的运送这些。 具体前线的东西我还不是太清楚，当时我是总协调人，主要在办公室工作，在前线的话主要还是他们的那个行动组，作信息情报的，调查组，行动组，还有运输队。(NGO49-01)

Appendix 4.4.27

NGO49-01-02

张：我觉得在政府工作没有前途嘛。。我们机构这种比较多，有 3 个人都是以前应该都是在政府工作了很多年的了，反正都是副局长以上的辞职的时候，但是就是觉得那个没有前途，没有什么意义，觉得这个事业有意思一些，所以选择这个。还有一个律师，他是一个有 7，8 年职业经验的律师，所以我们团队的这个结构也是很有趣的。

Appendix IV. Chapter 5 (Part I) Appendices

Appendix 5.1*A*

"Geodesic Distance" UCINET Output (Communication)
Pre-earthquake

```
GEODESIC DISTANCE
------------------------------------------------------------------------------

Type of data:                           ADJACENCY
Nearness transform:                     NONE
Input dataset:                          NGO info commu_pre_earthquake_138 (C:\Us
Output distance:                        C:\Users\admin\Documents\Dissertation Da

For each pair of nodes, the algorithm finds the # of edges in the shortest path
between them.
Average distance (among reachable pairs)    = 2.437
Distance-based cohesion ("Compactness")     = 0.034
  (range 0 to 1; larger values indicate greater cohesiveness)
Distance-weighted fragmentation ("Breadth") = 0.966


Frequencies of Geodesic Distances

            1       2
       Frequen Proport
       ------- -------
  1 1  230.000   0.178
  2 2  473.000   0.367
  3 3  417.000   0.324
  4 4  137.000   0.106
  5 5   26.000   0.020
  6 6    6.000   0.005
```

Appendix 5.1*B*

"Geodesic Distance" UCINET Output (Communication)

Emergency Response

```
GEODESIC DISTANCE
------------------------------------------------------------------------------

Type of data:                          ADJACENCY
Nearness transform:                    NONE
Input dataset:                         NGO info communication_emergency_post_ea
Output distance:                       C:\Users\admin\Documents\Dissertation Da

For each pair of nodes, the algorithm finds the # of edges in the shortest path
between them.
Average distance (among reachable pairs)    = 2.111
Distance-based cohesion ("Compactness")     = 0.186
  (range 0 to 1; larger values indicate greater cohesiveness)
Distance-weighted fragmentation ("Breadth") = 0.814


Frequencies of Geodesic Distances

             1        2
       Frequenc Proporti
       -------- --------
  1 1  1028.000    0.156
  2 2  3902.000    0.593
  3 3  1544.000    0.235
  4 4   107.000    0.016
```

Appendix 5.1*C*

"Geodesic Distance" UCINET Output (Communication)

Recovery

```
GEODESIC DISTANCE
------------------------------------------------------------------------------

Type of data:                           ADJACENCY
Nearness transform:                     NONE
Input dataset:                          NGO info commu_recovery_138 (C:\Users\ad
Output distance:                        C:\Users\admin\Documents\Dissertation Da

For each pair of nodes, the algorithm finds the # of edges in the shortest path
between them.
Average distance (among reachable pairs)    = 1.942
Distance-based cohesion ("Compactness")     = 0.198
  (range 0 to 1; larger values indicate greater cohesiveness)
Distance-weighted fragmentation ("Breadth") = 0.802


Frequencies of Geodesic Distances

             1        2
       Frequenc Proporti
       -------- --------
  1 1  1193.000    0.181
  2 2  4574.000    0.695
  3 3   812.000    0.123
```

Appendix 5.1*D*
Sample of "# of Geodesic Paths" UCINET Output (Communication)
Pre-earthquake

```
# OF GEODESIC PATHS BETWEEN PAIRS OF POINTS
------------------------------------------------------------------------------

Input dataset:                    NGO info commu_pre_earthquake_138 (C:\Users\admin\Documents\Dissertation Data\

# of Geodesic Paths
```

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	100	1	0	1	0	0	1	1	0	1	0	1	1	0	1	0	0	0	1	0	1	0	1	1	1	0	1	0	1	1	0	1	1	3	1	0	0	0	0	0	1	1	0	0	1	0	1	2	1	1	1	1	2	3	0
4	101	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	102	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	103	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	104	1	0	1	0	0	1	1	0	1	0	1	1	0	1	0	0	0	1	0	1	0	1	1	0	1	0	1	1	0	1	0	1	1	0	1	0	0	0	0	0	1	1	0	0	1	0	1	2	1	1	1	1	3	0
8	105	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	106	2	0	1	0	0	1	1	0	1	0	1	1	0	2	0	0	0	1	0	1	0	1	1	0	1	0	1	1	0	1	1	3	1	0	0	0	0	0	1	1	0	0	1	0	1	2	1	1	1	1	1	3	0
10	107	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	108	3	0	3	0	0	1	1	0	3	0	1	1	0	2	0	0	0	1	0	1	0	1	2	0	2	0	1	1	0	1	1	2	1	0	0	0	0	0	3	2	0	0	1	0	3	1	2	1	1	1	2	2	0
12	109	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	11	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	110	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	115	1	0	2	0	0	1	1	0	2	0	1	1	0	1	0	0	1	1	1	1	0	1	1	0	1	0	1	1	1	1	1	1	3	0	0	0	0	0	1	1	0	1	1	0	2	1	1	1	2	1	2	1	0
20	116	3	0	3	0	0	1	1	0	3	0	1	1	0	2	0	0	0	1	0	1	0	1	2	0	2	0	1	1	0	1	1	2	1	0	0	0	0	0	3	2	0	0	1	0	3	1	2	1	1	1	2	2	0
21	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	119	3	0	1	0	0	1	3	0	1	0	2	1	0	3	0	0	0	1	0	2	0	4	1	0	1	0	1	1	0	2	1	2	1	0	0	0	0	0	1	2	0	0	2	0	4	2	1	1	4	1	3	2	0
24	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	128	1	0	1	0	0	1	2	0	1	0	3	1	0	1	0	0	0	1	0	3	0	5	1	0	1	0	1	1	0	3	1	2	1	0	0	0	0	0	1	3	0	0	3	0	5	2	1	1	5	1	6	2	0
34	129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	137	1	0	1	0	0	1	5	0	1	0	1	2	0	1	0	0	0	1	0	1	0	3	1	0	1	0	3	3	0	1	1	1	1	0	0	0	0	0	1	1	0	0	1	0	1	2	1	4	1	4	2	1	0
44	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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47	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	19	4	0	2	0	0	2	1	0	2	0	2	1	0	5	0	0	0	2	0	2	0	1	1	0	1	0	1	1	0	2	2	1	4	0	0	0	0	0	2	1	0	0	2	0	1	1	1	1	1	1	3	1	0
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56	24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
57	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 5.1*E*
Sample of "# of Geodesic Paths" UCINET Output (Communication)
Emergency Response

OF GEODESIC PATHS BETWEEN PAIRS OF POINTS

Input dataset: NGO info communication_emergency_post_earthquake_138 (C:\Users\admin\Document

# of Geodesic Paths

		1 1	2 10	3 10	4 10	5 10	6 10	7 10	8 10	9 10	10 10	11 10	12 10	13 11	14 11	15 11	16 11	17 11	18 11	19 11	20 12	21 12	22 12	23 12	24 12	25 12	26 12	27 12	28 12	29 12	30 12	31 12	32 12	33 12	34 12	35 12	36 12	37 12	38 12	39 12	40 12	41 12	42 12	43 12	44 12	45 12	46 12	47 12	48 12	49 12	50 12	51 12	52 12	53 12	54 12	55 12	56 12	57 12	58 12	59 12	60 12	61 12	62 12
1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	100	1	2	1	2	1	1	1	2	1	2	3	2	2	1	2	1	1	2	1	1	1	2	1	2	2	1	3	2	2	3	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	101	1	4	2	1	1	1	1	2	2	2	2	3	1	2	2	1	1	2	2	1	1	3	2	1	2	1	2	3	2	3	1	2	2	2	2	1	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2
5	102	2	2	2	2	1	1	1	2	3	2	2	3	2	3	2	1	1	3	2	1	1	3	3	2	1	1	2	3	3	3	2	3	2	3	3	2	3	3	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
6	103	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	104	1	1	1	1	3	3	1	1	2	1	1	1	1	1	1	3	3	1	4	5	2	1	2	1	7	3	1	1	1	1	8	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	105	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	106	1	1	2	1	5	7	15	1	1	1	2	2	1	2	1	7	6	2	1	9	4	2	1	1	9	6	2	2	2	2	1	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10	107	1	1	3	2	1	1	3	1	3	1	1	1	1	3	2	1	1	3	4	3	1	1	5	1	1	2	4	1	3	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	108	3	2	3	2	1	1	2	2	3	2	1	3	2	3	2	1	1	3	2	1	1	3	4	2	1	1	3	3	3	1	2	3	2	3	2	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12	109	1	3	3	3	2	2	2	3	4	3	3	1	3	4	3	2	3	4	1	2	2	5	4	2	3	2	3	5	4	1	3	5	3	4	2	1	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
13	11	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	110	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	111	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	115	1	1	2	2	1	1	1	2	3	2	2	1	1	3	2	1	1	3	1	1	1	3	3	1	1	1	2	2	3	4	2	3	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	118	1	1	1	1	2	2	6	1	1	1	1	1	1	1	1	2	2	1	3	4	1	1	1	1	5	2	1	1	1	1	6	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	119	5	2	1	2	1	1	3	2	1	2	1	3	2	5	2	1	1	3	2	2	1	4	1	2	2	1	1	4	4	5	3	3	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	12	1	4	2	1	1	1	1	2	2	2	2	3	1	2	2	1	1	2	2	1	1	3	2	1	2	1	2	3	2	3	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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30	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	13	1	4	2	1	1	1	1	2	2	2	2	3	1	2	2	1	1	2	2	1	1	3	2	1	2	1	2	3	2	3	1	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	131	1	1	1	1	2	2	6	1	1	1	1	1	1	1	1	2	2	1	3	4	1	1	1	1	5	2	1	1	1	1	6	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	132	1	1	4	1	1	8	1	1	2	1	2	3	1	1	1	9	1	1	1	1	6	1	1	1	1	7	4	1	1	1	19	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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43	137	1	2	1	3	2	2	1	3	6	3	4	5	3	6	3	2	3	4	3	1	2	6	1	3	3	2	1	3	4	1	5	4	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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49	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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53	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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56	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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62	3	22	1	1	1	2	2	6	1	1	1	1	1	1	1	1	2	2	1	3	4	1	1	1	1	5	2	1	1	1	1	6	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 5.1*F*
Sample of "# of Geodesic Paths" UCINET Output (Communication) Recovery

```
# OF GEODESIC PATHS BETWEEN PAIRS OF POINTS
--------------------------------------------------------------------------------

Input dataset:                          NGO info commu_recovery_138 (C:\Users\admin\Documents\Dissertation Data\2(

# of Geodesic Paths
```

		1 1	2 10	3 10	4 10	5 10	6 10	7 10	8 10	9 10	10 10	11 10	12 10	13 11	14 11	15 11	16 11	17 11	18 11	19 11	20 11	21 11	22 12	23 12	24 12	25 12	26 12	27 12	28 12	29 12	30 12	31 12	32 12	33 12	34 12	35 12	36 12	37 12	38 12	39 12	40 12	41 12	42 12	43 12	44 12	45 12	46 12	47 12	48 12	49 12	50 12	51 12	52 12	53 12	54 12	55 12	56 12	57 12	58 12	59 12	60 12	61 12	62 12
1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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3	100	1	6	1	5	1	5	1	4	1	8	1	1	7	1	7	6	1	1	1	10	4	1	1	1	1	6	2	17	14	1	1	10	1	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	101	1	1	2	1	1	1	2	1	3	1	2	3	1	3	1	1	2	2	3	1	2	5	4	1	1	2	3	2	2	4	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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9	106	1	3	1	3	1	4	10	2	1	1	1	1	4	1	6	3	4	1	1	6	2	1	1	12	4	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	107	1	3	2	2	1	1	1	1	3	1	2	3	1	3	1	1	1	2	3	2	2	1	4	1	1	2	1	4	3	4	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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12	109	1	1	2	1	1	2	1	1	4	2	1	1	1	4	1	1	2	3	1	1	1	4	4	2	1	1	2	5	3	1	2	5	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	110	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	111	1	2	1	1	1	1	1	1	2	2	2	3	2	2	1	1	3	2	1	1	1	2	1	1	2	1	1	2	3	3	3	3	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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17	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	114	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	115	2	3	7	3	3	5	8	2	1	1	4	1	4	1	6	3	4	1	1	5	2	1	1	12	3	4	9	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	118	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	119	4	1	1	1	1	1	3	1	1	2	1	4	1	6	1	1	2	3	4	2	1	5	1	2	2	1	1	3	3	6	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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26	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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29	124	2	4	14	3	5	7	1	5	1	1	7	3	6	2	1	4	7	2	1	10	2	2	2	1	5	1	1	1	2	1	1	2	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	13	2	4	6	3	3	4	8	2	1	1	5	1	5	1	1	3	3	1	1	5	2	2	1	1	3	5	8	2	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	131	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	132	1	1	2	1	2	2	2	1	2	1	2	2	1	1	1	1	1	1	1	2	1	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
39	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	134	3	2	2	1	1	1	2	2	3	1	2	3	2	4	1	1	3	2	3	2	1	5	4	1	2	2	4	4	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
41	135	1	2	5	1	2	4	1	3	6	3	3	1	1	1	1	1	4	1	1	6	1	1	10	1	2	1	1	1	1	1	1	7	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
42	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	137	1	1	5	1	2	1	1	1	3	1	2	2	1	3	1	1	2	2	2	1	1	3	1	4	1	1	1	2	1	1	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	19	9	1	3	1	2	3	2	1	1	1	2	1	1	1	2	1	2	2	1	1	1	1	1	4	2	1	4	4	3	3	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
51	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	20	1	1	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1	1	1	2	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
53	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 5.1.1

There was one special feature of the current networks that could have contributed to this type of structure. One was the design of aggregating the actors in the state and the market domain into two separate actors. The result of this was that actor #1 and #2 can only have civil society actors reaching out towards them but they themselves will not have out-going ties to count towards the measure of reciprocity. This is a disadvantage of such an aggregation design because they might indeed have reciprocated connections with other civil society actors. Future research could certainly focus on improving this aspect of the data collection and analysis. For now, the point that I am making here is the existence of actor #1 and #2 as representatives of the state and the domain is a factor to be taken into consideration when examining the level of reciprocity across the three periods of times.

Appendix 5.1.2

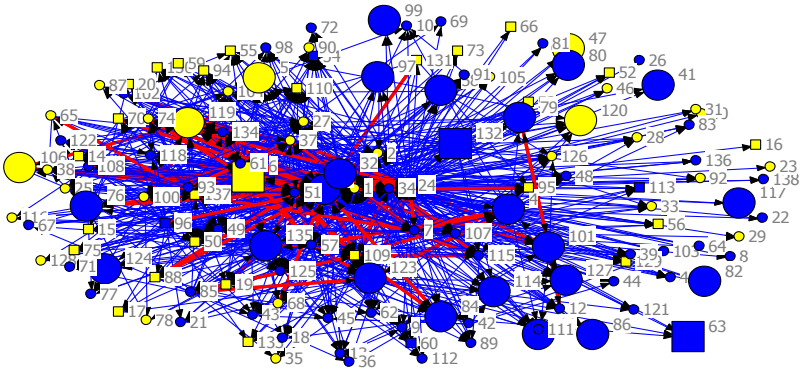
An alternative way to look at transitivity is to see it as the percentage of all triads that are transitive. This is done by dividing the number of transitive triads from column one by the number of triples of all kinds from column three, and this yields the measures in column four called the "percentage of all ordered triples". While the usage of the number of triples of all kinds is more comprehensive in terms of considering all the possible types of relationship among three actors, it makes more sense to use the measure normed by the number of $\{AB, BC, anything\}$. And this is because the calculation in this way will emphasize the action from A to C by focusing only on all the possibilities that these two actors will ever have a link between them.

Table 5.1.2. Transitivity Measures (Communication network)

	$\{AB, BC, AC\}$	$\{\{AB, BC, anything\}$	# of triples of all kinds	% of $\{AB, BC, AC\}$	Transitivity
t1	**283**	**902**	**2571216**	**0.01%**	**31.37%**
t2	**4328**	**12458**	**2571216**	**0.17%**	**34.74%**
t3	**6101**	**16067**	**2571216**	**0.24%**	**37.97%**

Appendix 5.1.3*A*

Communication Network (Emergency Response)



*__Color:__ establishment

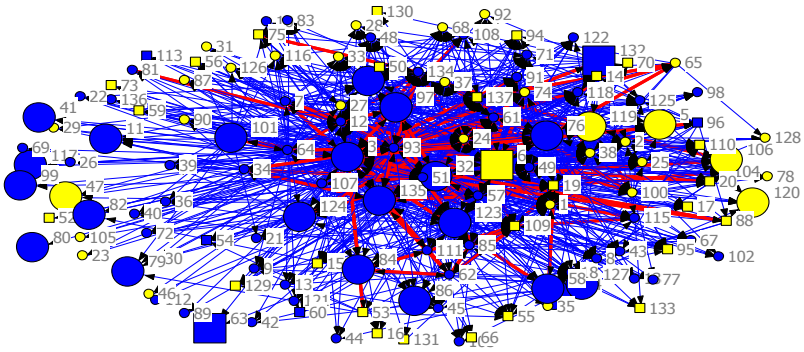
Yellow: before EQ; Blue: after EQ

*__Shape__: location

Circle: Sichuan based; Square: Non-Sichuan

Appendix 5.1.3*B*

Communication Network (Long-term Recovery)



*__Color:__ establishment

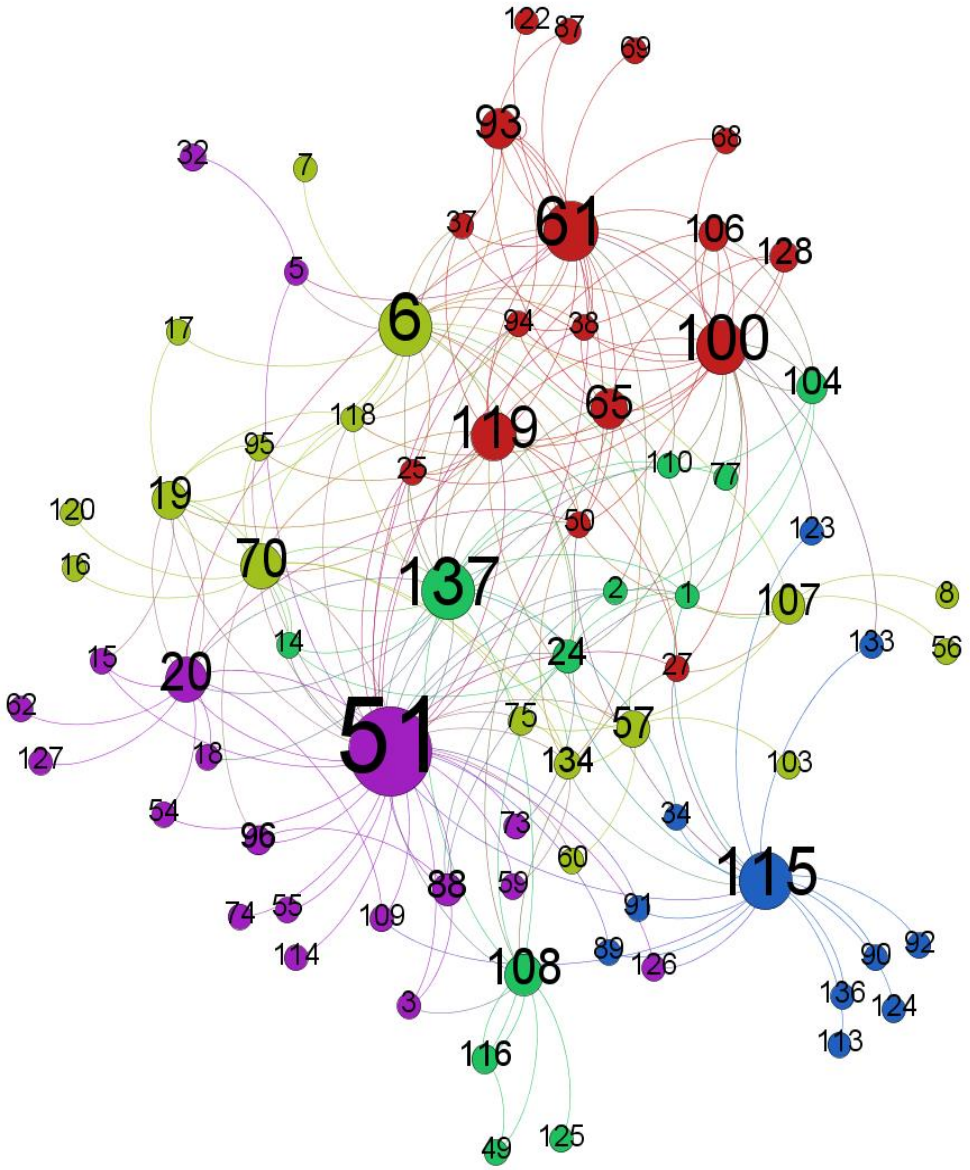
Yellow: before EQ; Blue: after EQ

*__Shape__: location

Circle: Sichuan based; Square: Non-Sichuan

Appendix 5.1.4

(A)

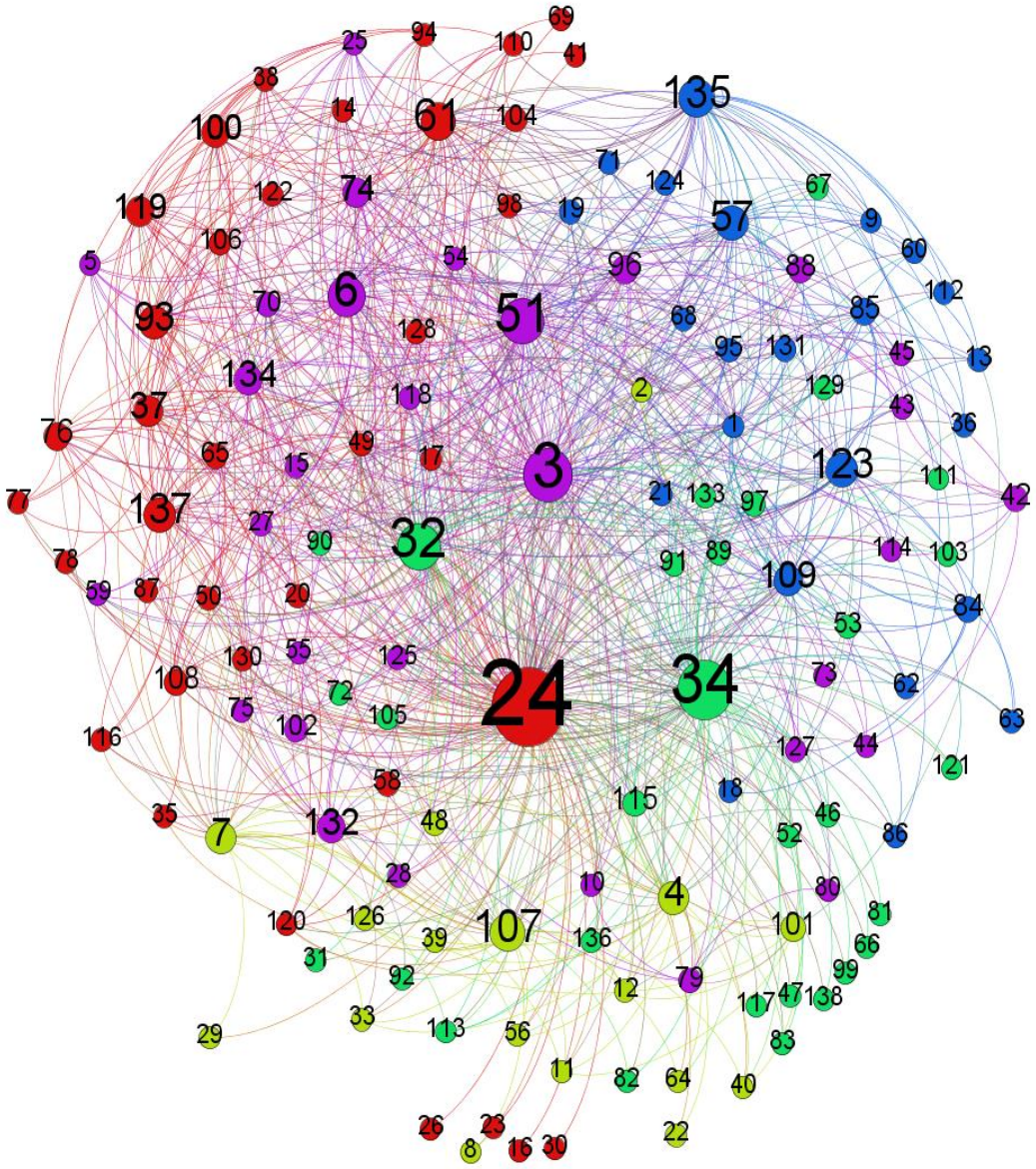


Size: Out-degree; Color: Communities

Figure A.5.1.4*A*. Pre-earthquake Community Structure Detection (Communication Network)-(Blondel, et al., 2008)

Appendix 5.1.4

(B)

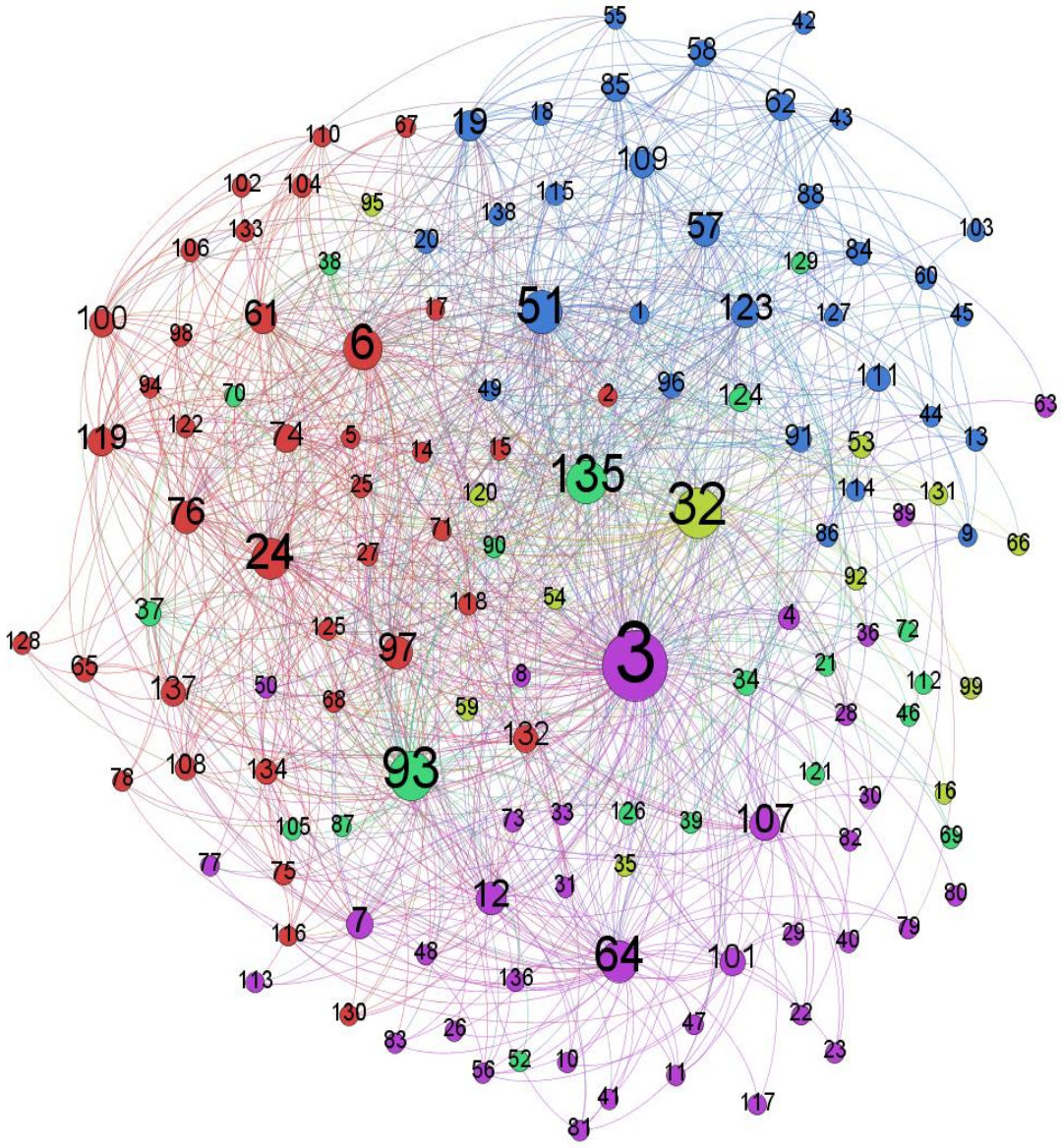


Size: Out-degree; Color: Communities

Figure A.5.1.4*B*. Emergency Response Community Structure Detection (Communication Network)-(Blondel, et al., 2008)

Appendix 5.1.4

(C)



Size: Out-degree; Color: Communities

Figure A.5.1.4*C*. Recovery Community Structure Detection (Communication Network)-(Blondel, et al., 2008)

Appendix 5.1.5*A1*

Sample of Maximum Flow Matrix (Communication Network)

Pre-earthquake

MAXIMUM FLOW

Input dataset: NGO info comm_pre_earthquake_138 C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 a

	1	10	100	101	102	103	104	105	106	107	108	109	11	110	111	112	113	114	115	116	117	118	119	12
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	6.000	0.000	0.000	0.000	0.000	1.000	3.000	0.000	4.000	0.000	1.000	2.000	0.000	5.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	3.000	3.000	0.000
101	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
103	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
104	2.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000	2.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	1.000	1.000	0.000
105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
106	2.000	0.000	2.000	0.000	0.000	1.000	2.000	0.000	0.000	0.000	1.000	2.000	0.000	2.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	2.000	2.000	0.000
107	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
108	3.000	0.000	2.000	0.000	0.000	1.000	2.000	0.000	2.000	0.000	0.000	2.000	0.000	2.000	0.000	0.000	0.000	1.000	0.000	2.000	0.000	2.000	2.000	0.000
109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
114	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115	3.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000	1.000	0.000	1.000	2.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000	1.000	0.000	1.000	1.000	0.000
116	1.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000	1.000	0.000	1.000	1.000	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	1.000	1.000	0.000
117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
118	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
119	7.000	0.000	5.000	0.000	0.000	1.000	3.000	0.000	4.000	0.000	1.000	2.000	0.000	5.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	5.000	0.000	0.000
12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
121	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
123	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
124	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
128	3.000	0.000	3.000	0.000	0.000	1.000	3.000	0.000	3.000	0.000	1.000	2.000	0.000	3.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	3.000	3.000	0.000
129	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
132	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
134	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Appendix 5.1.5*A2*

Sample of Maximum Flow Matrix (Communication Network)

Emergency Response

MAXIMUM FLOW

Input dataset: NGO info communication_emergency_post_earthquake_138 C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINE

	1	10	100	101	102	103	104	105	106	107	108	109	11	110	111	112	113	114	115	116
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	7.000	5.000	0.000	6.000	4.000	5.000	6.000	5.000	6.000	4.000	5.000	6.000	6.000	7.000	5.000	4.000	6.000	6.000	6.000	6.000
101	5.000	4.000	4.000	0.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	5.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
102	3.000	3.000	3.000	3.000	0.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
103	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
104	3.000	2.000	2.000	2.000	2.000	2.000	0.000	2.000	2.000	2.000	2.000	2.000	2.000	3.000	2.000	2.000	2.000	2.000	2.000	2.000
105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
106	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	0.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
107	15.000	5.000	12.000	6.000	4.000	5.000	9.000	5.000	8.000	0.000	5.000	13.000	6.000	11.000	5.000	4.000	6.000	8.000	7.000	6.000
108	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	0.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	5.000
109	12.000	5.000	10.000	6.000	4.000	5.000	9.000	5.000	8.000	4.000	5.000	0.000	6.000	10.000	5.000	4.000	6.000	8.000	7.000	6.000
11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
114	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115	5.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	5.000	4.000	0.000	4.000
116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
118	2.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
119	9.000	5.000	9.000	6.000	4.000	5.000	9.000	5.000	8.000	4.000	5.000	9.000	6.000	9.000	5.000	4.000	6.000	8.000	7.000	6.000
12	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
121	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
123	12.000	5.000	11.000	6.000	4.000	5.000	9.000	5.000	8.000	4.000	5.000	11.000	6.000	11.000	5.000	4.000	6.000	8.000	7.000	6.000
124	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
128	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
129	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
131	3.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
132	9.000	5.000	8.000	6.000	4.000	5.000	8.000	5.000	8.000	4.000	5.000	8.000	6.000	8.000	5.000	4.000	6.000	8.000	7.000	6.000
133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
134	10.000	5.000	10.000	6.000	4.000	5.000	9.000	5.000	8.000	4.000	5.000	10.000	6.000	10.000	5.000	4.000	6.000	8.000	7.000	6.000
135	17.000	5.000	12.000	6.000	4.000	5.000	9.000	5.000	8.000	4.000	5.000	16.000	6.000	11.000	5.000	4.000	6.000	8.000	7.000	6.000
136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Appendix 5.1.5*A3*

Sample of Maximum Flow Matrix (Communication Network)

Recovery

MAXIMUM FLOW

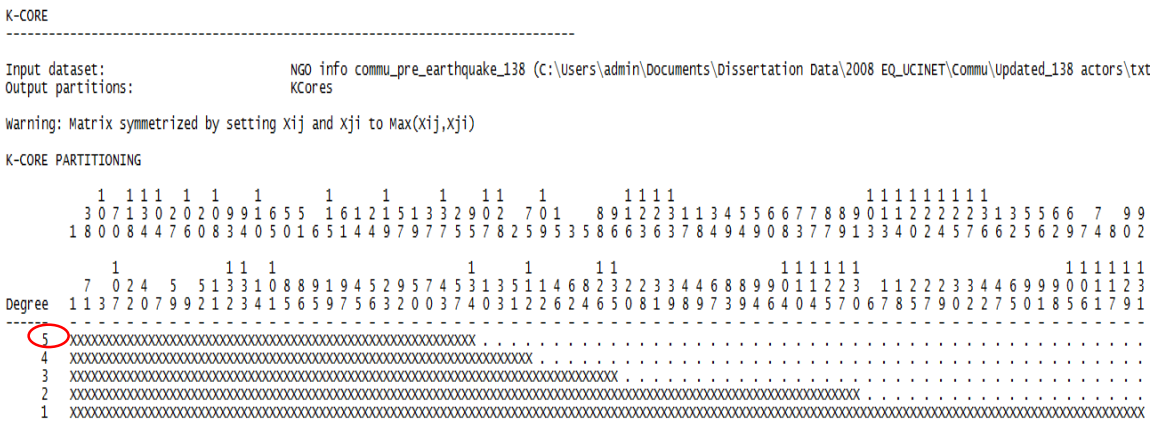
Input dataset: NGO inf commu_recovery_138 C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 acto

	1	10	100	101	102	103	104	105	106	107	108	109	11	110	111	112	113	114	115	116
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	7.000	5.000	0.000	3.000	3.000	4.000	6.000	3.000	6.000	3.000	5.000	6.000	6.000	7.000	6.000	2.000	4.000	6.000	6.000	6.000
101	9.000	5.000	7.000	0.000	3.000	4.000	8.000	3.000	8.000	3.000	5.000	8.000	7.000	8.000	7.000	2.000	4.000	7.000	8.000	9.000
102	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
103	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
104	2.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	2.000	1.000	1.000	1.000	1.000	1.000	1.000
105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
106	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	0.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
107	10.000	5.000	7.000	3.000	3.000	4.000	9.000	3.000	9.000	0.000	5.000	9.000	7.000	9.000	7.000	2.000	4.000	7.000	9.000	9.000
108	4.000	4.000	4.000	3.000	3.000	4.000	4.000	3.000	4.000	3.000	0.000	4.000	4.000	4.000	4.000	2.000	4.000	4.000	4.000	5.000
109	12.000	5.000	7.000	3.000	3.000	4.000	10.000	3.000	9.000	3.000	5.000	0.000	7.000	11.000	7.000	2.000	4.000	7.000	11.000	10.000
11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
111	7.000	5.000	6.000	3.000	3.000	4.000	6.000	3.000	6.000	3.000	5.000	6.000	6.000	6.000	6.000	2.000	4.000	6.000	6.000	6.000
112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
114	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	0.000	2.000
116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
118	2.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
119	10.000	5.000	7.000	3.000	3.000	4.000	9.000	3.000	9.000	3.000	5.000	9.000	7.000	9.000	7.000	2.000	4.000	7.000	9.000	9.000
12	17.000	5.000	7.000	3.000	3.000	4.000	10.000	3.000	9.000	3.000	5.000	14.000	7.000	13.000	7.000	2.000	4.000	7.000	11.000	10.000
120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
121	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
123	11.000	5.000	7.000	3.000	3.000	4.000	10.000	3.000	9.000	3.000	5.000	10.000	7.000	10.000	7.000	2.000	4.000	7.000	10.000	10.000
124	5.000	5.000	5.000	3.000	3.000	4.000	5.000	3.000	5.000	3.000	5.000	5.000	5.000	5.000	5.000	2.000	4.000	5.000	5.000	5.000
125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
128	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
129	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
131	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
132	7.000	5.000	6.000	3.000	3.000	4.000	6.000	3.000	6.000	3.000	5.000	6.000	6.000	6.000	6.000	2.000	4.000	7.000	6.000	6.000
133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
134	5.000	5.000	5.000	3.000	3.000	4.000	5.000	3.000	5.000	3.000	5.000	5.000	5.000	5.000	5.000	2.000	4.000	5.000	5.000	5.000
135	26.000	5.000	7.000	3.000	3.000	4.000	10.000	3.000	9.000	3.000	5.000	14.000	7.000	13.000	7.000	2.000	4.000	7.000	11.000	10.000
136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
137	9.000	5.000	7.000	3.000	3.000	4.000	8.000	3.000	8.000	3.000	5.000	8.000	7.000	8.000	7.000	2.000	4.000	7.000	8.000	9.000
138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Appendix 5.1.5*B*1

Sample of K-core Partitioning (Communication Network)

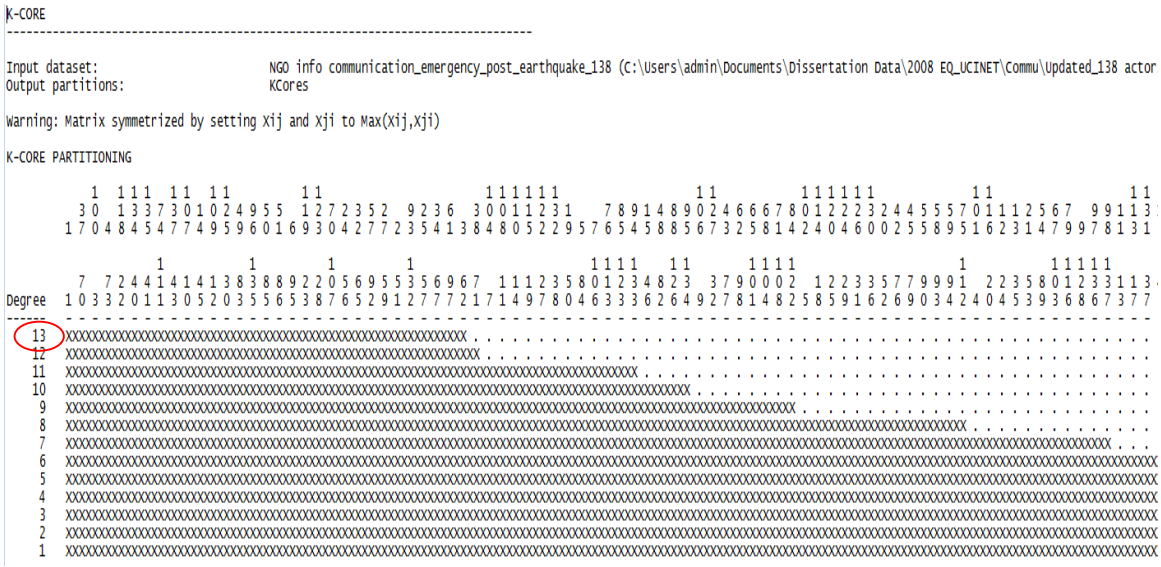
Pre-earthquake



Appendix 5.1.5*B*2

Sample of K-core Partitioning (Communication Network)

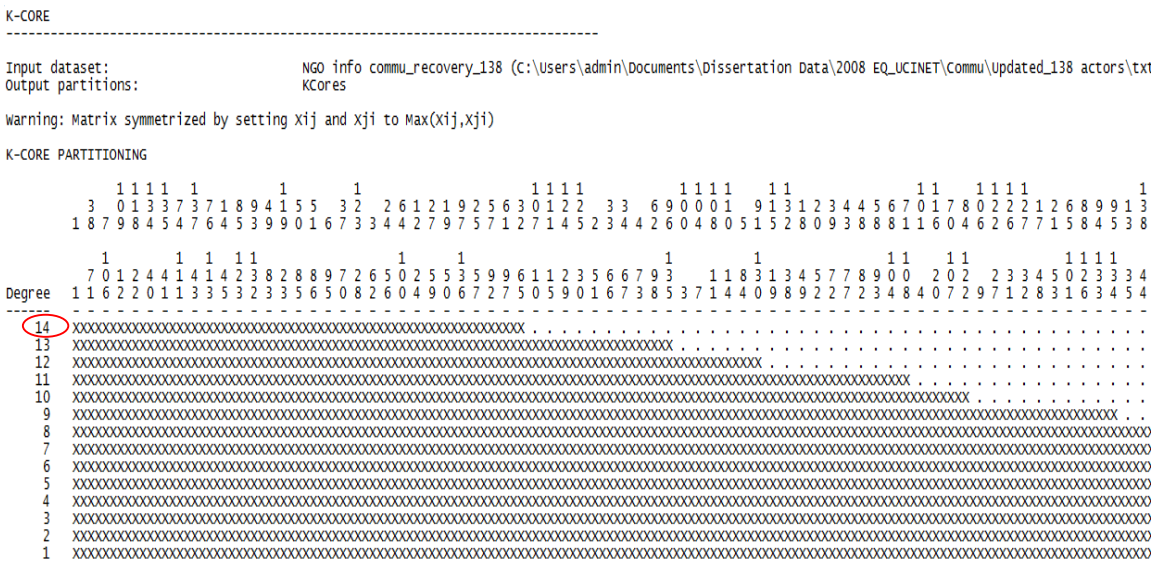
Emergency Response



Appendix 5.1.5*B3*

Sample of K-core Partitioning (Communication Network)

Recovery



Appendix 5.1.5*C1*

Clique Membership (Communication Network)

Pre-earthquake

```
CLIQUES
--------------------

Minimum Set Size:
Input dataset:

NOTE: Directed graph.
4 cliques found.

   1:  119 51 61
   2:  119 51 70
   3:  137 20 51
   4:  137 51 70
```

Appendix 5.1.5*C2*

Sample of actor-by-actor HIERARCHICAL CLUSTERING OF OVERLAP MATRIX (Communication Network)

Pre-earthquake

```
          1   1
    6 2 3 5 1 7
    1 0 7 1 9 0
                1
    9 5 4 8 2 0
Level 7 2 3 6 3 7
----- - - - - - -
2.000 . . . XXX .
1.667 . . . XXXXX
1.133 . . XXXXXXX
0.413 . XXXXXXXXX
0.267 XXXXXXXXXXX
0.000 XXXXXXXXXXXX
```

Actors

Appendix 5.1.5*C3*

Sample of Clique-by-Clique Actor Co-membership Matrix (Communication Network)

Pre-earthquake

```
Clique-by-Clique Actor Co-membership matrix

        1 2 3 4
        - - - -
    1   3 2 1 1
    2   2 3 1 2
    3   1 1 3 2
    4   1 2 2 3
```

Appendix 5.1.5*D1*

Clique Membership (Communication Network)

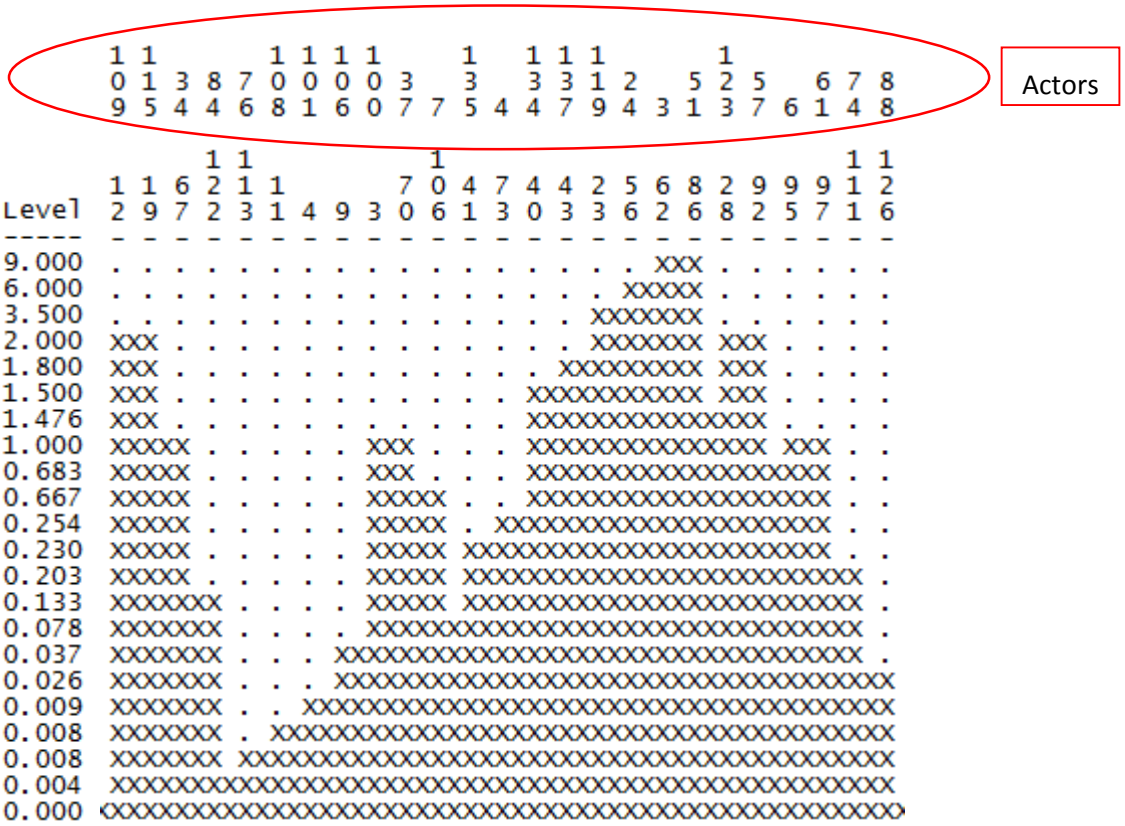
Emergency Response

```
CLIQUES
----------------------

Minimum Set Size:
Input dataset:

NOTE: Directed graph.
25 cliques found.

   1:  109 24 3 51
   2:  119 24 3 51
   3:  123 24 3 51
   4:  137 24 3 51
   5:  108 24 3
   6:  100 119 24 3
   7:  101 24 3
   8:  24 3 6 74
   9:  106 119 3 51
  10:  134 137 3 51
  11:  134 3 51 57
  12:  123 3 51 57
  13:  109 3 84
  14:  3 51 88
  15:  109 115 34
  16:  109 115 51
  17:  134 135 51 57
  18:  100 119 24 37
  19:  119 24 37 61
  20:  137 24 37 7
  21:  123 4 57
  22:  119 24 51 61
  23:  24 6 61
  24:  51 57 61
  25:  137 24 76
```

Appendix 5.1.5D2

Sample of actor-by-actor HIERARCHICAL CLUSTERING OF OVERLAP MATRIX
(Communication Network)

Emergency Response



Appendix 5.1.5*D3*

Sample of Clique-by-Clique Actor Co-membership Matrix (Communication Network)

Emergency Response

Clique-by-Clique Actor Co-membership matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	4	3	3	3	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	0	2	1	1	1
2	3	4	3	3	2	3	2	2	3	2	2	2	1	2	0	1	1	2	2	1	0	3	1	1	1
3	3	3	4	3	2	2	2	2	2	2	2	3	1	2	0	1	1	1	1	1	1	2	1	1	1
4	3	3	3	4	2	2	2	2	2	3	2	2	1	2	0	1	1	1	1	2	0	2	1	1	2
5	2	2	2	2	3	2	2	2	1	1	1	1	1	1	0	0	0	1	1	1	0	1	1	0	1
6	2	3	2	2	2	4	2	2	2	1	1	1	1	1	0	0	0	3	2	1	0	2	1	0	1
7	2	2	2	2	2	2	3	2	1	1	1	1	1	1	0	0	0	1	1	1	0	1	1	0	1
8	2	2	2	2	2	2	2	4	1	1	1	1	1	1	0	0	0	1	1	1	0	1	2	0	1
9	2	3	2	2	1	2	1	1	4	2	2	2	1	2	0	1	1	1	1	0	0	2	0	1	0
10	2	2	2	3	1	1	1	1	2	4	3	2	1	2	0	1	2	0	0	1	0	1	0	1	1
11	2	2	2	2	1	1	1	1	2	3	4	3	1	2	0	1	3	0	0	0	1	1	0	2	0
12	2	2	3	2	1	1	1	1	2	2	3	4	1	2	0	1	2	0	0	0	2	1	0	2	0
13	2	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	0	0	0	0	0	0	0	0	0
14	2	2	2	2	1	1	1	1	2	2	2	2	1	3	0	1	1	0	0	0	0	1	0	1	0
15	1	0	0	0	0	0	0	0	0	0	0	0	1	0	3	2	0	0	0	0	0	0	0	0	0
16	2	1	1	1	0	0	0	0	1	1	1	1	1	1	2	3	1	0	0	0	0	1	0	1	0
17	1	1	1	1	0	0	0	0	1	2	3	2	0	1	0	1	4	0	0	0	1	1	0	2	0
18	1	2	1	1	1	3	1	1	1	0	0	0	0	0	0	0	0	4	3	2	0	2	1	0	1
19	1	2	1	1	1	2	1	1	1	0	0	0	0	0	0	0	0	3	4	2	0	3	2	1	1
20	1	1	1	2	1	1	1	1	0	1	0	0	0	0	0	0	0	2	2	4	0	1	1	0	2
21	0	0	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	1	0	0	0	3	0	0	1	0
22	2	3	2	2	1	2	1	1	2	1	1	1	0	1	0	1	1	2	3	1	0	4	2	2	1
23	1	1	1	1	1	1	1	2	0	0	0	0	0	0	0	0	0	1	2	1	0	2	3	1	1
24	1	1	1	1	0	0	0	0	1	1	2	2	0	1	0	1	2	0	1	0	1	2	1	3	0
25	1	1	1	2	1	1	1	1	0	1	0	0	0	0	0	0	0	1	1	2	0	1	1	0	3

Appendix 5.1.5*E1*

Clique Membership (Communication Network)

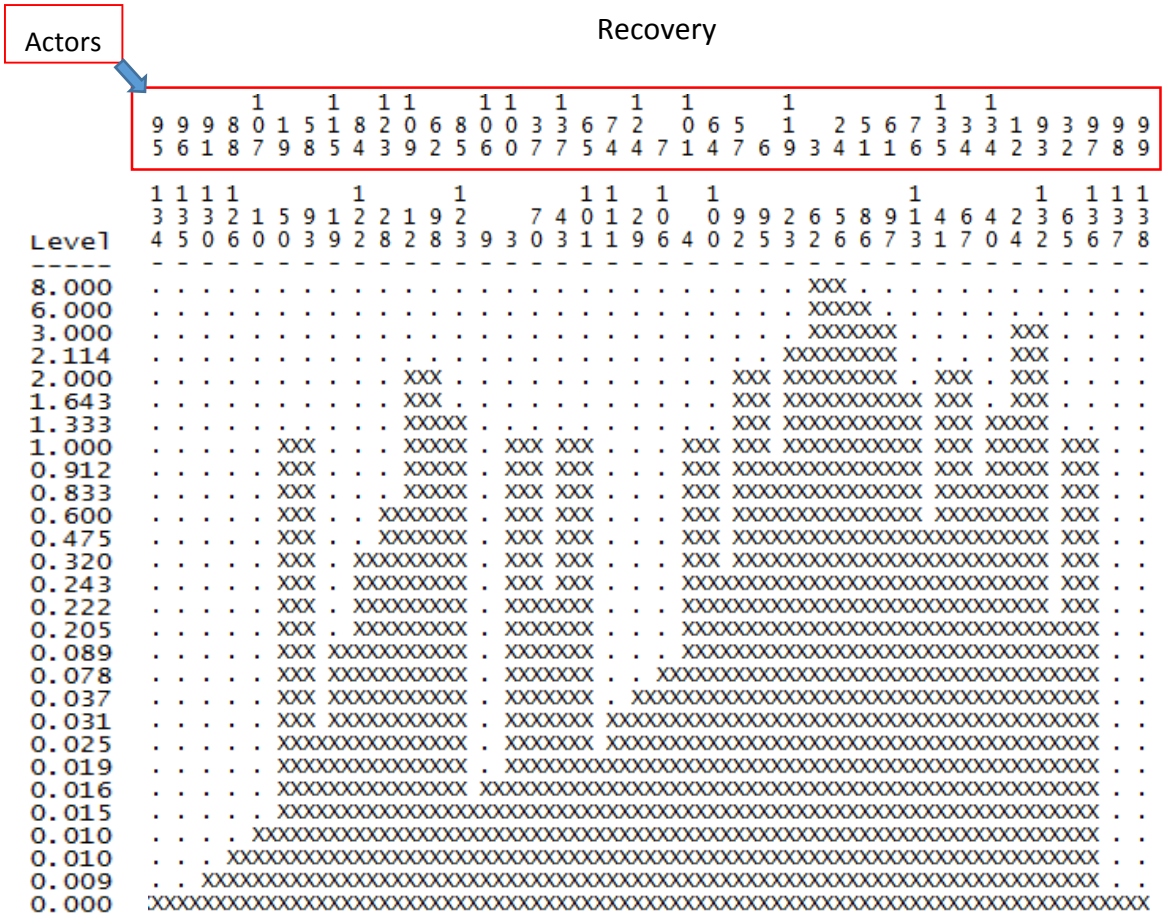
Recovery

```
47 cliques found.

  1:  119 24 3 51 61
  2:  135 24 3 51
  3:  24 3 32 51
  4:  109 24 3 51
  5:  12 134 24 3
  6:  12 135 24 3
  7:  137 24 3
  8:  24 3 74
  9:  107 3 51
 10:  109 19 3
 11:  119 19 3
 12:  19 3 57
 13:  19 3 58
 14:  101 3 64
 15:  119 3 37 61
 16:  137 3 37
 17:  135 3 57 6
 18:  3 57 6 61
 19:  3 32 57
 20:  3 57 91
 21:  3 6 74
 22:  3 6 7
 23:  109 3 62 84
 24:  135 3 62
 25:  12 3 64 93
 26:  137 3 65
 27:  12 3 7
 28:  3 51 88
 29:  12 134 3 93
 30:  12 135 3 93
 31:  3 32 93
 32:  3 61 93
 33:  3 32 51 97
 34:  12 3 97
 35:  100 119 24
 36:  100 119 37
 37:  106 119 51
 38:  109 115 51
 39:  123 51 85
 40:  124 51 61
 41:  135 34 51
 42:  135 34 93
 43:  6 61 76
 44:  51 61 76
 45:  61 76 93
 46:  109 62 85
 47:  109 51 85
```

Appendix 5.1.5*E2*

Sample of actor-by-actor HIERARCHICAL CLUSTERING OF OVERLAP MATRIX

(Communication Network)



Appendix 5.1.5*E3*

Sample of Clique-by-Clique Actor Co-membership Matrix (Communication Network)

Recovery

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	5	3	3	3	2	2	2	2	2	1	2	1	1	1	3	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	2	2	1	2	1	2	1	1	2	1	0	1	2	1	0	1	
2	3	4	3	3	2	3	2	2	2	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1	1	1	2	1	1	2	1	1	2	1	1	0	1	1	1	2	1	0	1	0	0	1	
3	3	3	4	3	2	2	2	2	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	2	1	3	1	1	0	1	1	1	1	1	0	0	1	0	0	1	
4	3	3	3	4	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	2	1	1	0	1	2	1	1	1	0	0	1	0	1	2		
5	2	2	2	2	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	3	2	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0		
6	2	3	2	2	3	4	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	2	2	1	2	1	2	3	1	1	1	2	1	0	0	0	0	0	1	1	0	0	0	0	0		
7	2	2	2	2	2	2	3	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
8	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
9	2	2	2	2	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	1	0	0	1	1	1	1	1	0	0	1	0	0	1	
10	1	1	1	2	1	1	1	1	1	3	2	2	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	1	
11	2	1	1	1	1	1	1	1	1	2	3	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0		
12	1	1	1	1	1	1	1	1	1	2	2	3	2	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
13	1	1	1	1	1	1	1	1	1	2	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
14	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
15	3	1	1	1	1	1	1	1	1	1	2	1	1	1	4	2	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	0	0	1	0	0	1	1	1	0	0		
16	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	3	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0		
17	1	2	1	1	1	2	1	1	1	1	1	2	1	1	1	1	4	3	2	2	2	2	1	2	1	1	1	1	1	2	1	1	1	0	0	0	0	0	0	0	1	1	1	0	0		
18	2	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	3	4	2	2	2	2	1	1	1	1	1	1	1	1	2	1	1	0	0	0	0	0	1	0	0	2	1	1	0	0	
19	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	3	2	1	1	1	1	1	1	1	1	1	1	2	1	2	1	0	0	0	0	0	0	0	0	0	0	0		
20	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
21	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	2	1	1	3	2	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0		
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	3	1	1	1	1	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0		
23	1	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	4	2	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	2	1	
24	1	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	3	1	1	1	1	1	2	1	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0
25	1	1	1	1	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	4	1	2	1	3	3	2	2	1	2	0	0	0	0	0	0	1	0	0	1	0	0		
26	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
27	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	3	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0		
28	2	2	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	2	1	0	0	1	1	1	1	1	0	0	1	0	0	1
29	1	1	1	1	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	2	1	4	3	2	2	1	2	0	0	0	0	0	1	0	0	1	0	0
30	1	2	1	1	2	3	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	3	1	2	1	3	4	2	2	1	2	0	0	0	0	0	0	0	1	2	0	0	1	0	0
31	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	2	2	3	2	2	1	0	0	0	0	0	0	0	1	0	0	1	0	0	
32	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	2	1	1	1	2	2	2	3	1	1	0	0	0	0	0	0	1	0	1	1	1	2	0	0
33	2	2	3	2	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	2	1	4	2	0	0	1	1	1	1	1	0	0	1	0	0	1	
34	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	1	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0		
35	2	1	1	1	1	1	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0		
36	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	0	0	0	0	0	0	0	0	0		
37	2	1	1	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	3	1	1	1	1	0	0	1	0	0	1
38	1	1	1	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	3	1	1	1	1	0	0	1	0	1	2
39	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	3	1	1	0	0	1	0	1	2	
40	2	1	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	1	1	3	1	0	1	2	1	0	1
41	1	2	1	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	1	1	1	1	3	2	0	1	0	0	1
42	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0	2	3	0	0	1	0	0
43	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	3	2	2	0
44	2	1	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	1	1	2	1	0	2	3	2	0	1
45	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	1	1	2	0	0	0	0	0	0	0	1	0	1	2	2	3	0	0
46	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2
47	1	1	1	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3

Appendix 5.1.5.01

SG123-01-01

非政府组织不能站在政府的立场而帮助政府说话，比如说，如果政府和群众之间有了某些矛盾，这中间群众的不满可能是由政府的某些政策造成的，这个时候，如果政府要求我们非政府组织出来站在政府的立场上来说服百姓，我们是不会去做的。我认为理想状态是，我们有独立于群众和政府的思考方式，不去有什么观点，我们可以鼓励各方表达自己，而既不代表民众也不代表政府。(Summary of account of SG123-01)

SG123-01-02

我们的（合法性）是挂在四川大学下面（社会科学研究处，自然科学）， 因为这样不用交税。不过现在正在都江堰进行注册，但是注册后就需要交税了。(SG123)

Appendix 5.1.CaseSG123.2

他觉得青少年心理这一块很重要，尤其是从学校到家庭各个方面的环境与培养都很重要的。灾区现在 面临的生计问题很大，一开始有些团队帮助当地群众搞十字绣，但是随着时间的推移离地震的日子越来越远，人们的关注力有所下降，后来由灾区群众做的十字绣也没有市场了。（看来非政府组织还是需要加强对灾区人民长远生计问题又帮助的事情，才能真正起到作

...灾区的生计问题。LZ (SG123-01)地震后通过红十字会认识并组织了他的志愿者团队，然后来到汉旺， 作了心理问题相关的工作后，又认识了川大的老师。他认为做公益事业比他以前做的电子相关的工作好很多，不是那种很机械的做工，现在则能够在帮助他人的同时也帮助和认知自己，很有意义。他就指着他名片的背后的几行字念道：助人自助，自觉觉他。

Appendix 5.1.5.02

SG3-01-11

其实在大家的相处当中没有这个概念，这个概念体现的最强烈的就是在你申请项目的时候。其实像平常大家不管是工作上的交流还是交往，甚至是一些私人上的沟通方面都是没有很大的问题的。说实话，其实一开始的时候我都不大清楚这些概念像志愿者团队阿，NGO 阿这些的，

Appendix 5.1.5.03

SG3-01-12

。。。大家都没有这种属于不属于的概念。可能是这样的，一个是大家在这么长的过程中，大家通过工作或者是人际关系这方面都有接触，不管是私人上还是工作上的，然后当他们有一些需要的时候，首先肯定不是金钱上的需要，信息上包括其他方面上一些小的服务阿，比方说需要一些咨询阿，有时候郭老师和高老师那边可以给他们一些项目上的建议的时候啊，就是当他们有需求的时候回来找我们，如果我们有些活动的时候，不管是我们的培训阿和学习活动阿，我们也会发给大家，大家如果有兴趣的话可以来参加。

而没有说是 512 这个团体阿，或者以 512 为中心这个平台，我们也没有说这样一个概念。 其实我们最早的时候不是还签署了一个合作备忘录马，那时其实 512 并不是一个独立的概念，512 它本身就是一个平台，他家都是这个平台上的主体，所以说大家之间要签署这样一个东西。如果是那样的话，512 其实算是一个社团性质的，他这个主体的存在就是一个平台。由很多机构在上面。他们互相之间也有联系，可能并不是那么多。后来在大家慢慢的回到自己的工作之后，大家之间的联系还是需要有人来做这个事情，在这个基础上， 好像 512 作为主体的这个概念慢慢的出来了。但是它还是像是一个连结点。

Appendix 5.1.5.04

SG3-01-12

在刚开始我们把它作为一个中心，就是刚才我说的联合体，就会需要很多的成员机构之类的，我们当时还签了一个所谓的协议书的东西，最早前的就事 21 家机构，慢慢发展到 08 年底，中心这边你就会发现联合的性质就慢慢的淡化了，不管是主动的还是被动的，或者是客观原因，然后我们也没有刻意的去提所谓的成员机构的这个概念，

Appendix 5-1-5-05

SG3-01-13

我们是为其他机构服务的，这个服务的概念我们当时给的一个定义就是为参与救灾的这些民间组织服务，但其实是说只要是民间组织大家觉得有一些我们可以提供的服务来找我们的时候，我们都会提供。所以慢慢的就淡化了所谓成员机构的概念。

Appendix 5.1.5.06

SG3-01-14

我们也没有刻意的去统计这个数字，也是不完全统计，和我们之间有这样的联系不管是联系阿，合作阿，往来这样的至少有 300 家是肯定有的。不管是很密切的那种还是有联系的那种，至少有 300 家。这个可能也是 512 中心做到现在也快三年了它本身的一个很大的资源优势，就是说它和机构之间这样的一个良好的关系。

Appendix 5.1.5.07

SG3-02-03

如果没有这个平台的话，他们会非常困难。特别是外地的，因为当时地震发生一个多月马，全国很多个地的，各省的，ngo 组织很多都在那个地方，还有很多都没来，外省的过来就特别的需要，他说你这个地方情况他不了解，(SG3-02)

Appendix 5.1.CaseSG3.4

所以在这种情况下大家又经过讨论之后，还是决定要（中心的）继续存在。那么就得考虑如果要继续存在的话，可能就不能再用前面的那个模式来运行。因为要用前面的那个模式来运行的话，那怎么来持续呢？他没办法持续对巴。所以就要改变这种运行的模式把。就要由志愿者模式转变为项目支持的模式。(SG3-02)

有几种把，工作上的来往的话有这么几种。一种就是说，我需要及时地知道他们最近的一些工作信息，比如说我会打电话给他们或者给他们发邮件请他们告诉我一些。如果他们有工作简报的话，他们就会给我。一个方面我会把他们的工作在我们的网站上呈现出来。另外一方面我们的网站正在改版，我就是想把它做成一个地图，及时四川的地图，你点开这个图，你可以清楚地看到有哪个机构，在哪个地方坐在后重建的项目。是已经完成的项目还是正在做的项目，这个事我现在正在做的。但是我是技术版师，所以我只是在做数据整理的这一部分，可能其他的很多工作还要找人帮忙。还有一个部分就是说机构会主动的和我们联系，它们找我们的原因可能有几种。一种就是他们在工作中也许需要的支持，这个支持可能是信息的，也可能是其他的，遇到的一些问题，觉得我们可以提供帮助的，它们会来找我们。或者说他们想组织一些培训阿，搞一些自己的活动阿，希望我们帮他们联系其他的人员阿，或者说他们需要我们给他们提供场地阿，因为有时候他们在成都没有场地，也没有

办公室，需要我们给他们做后勤服务阿之类的。还有另外一种，因为现在这个圈子里面相对来说年轻人还蛮多的，大家可能在工作之余，课余生活上和兴趣爱好上还是会有很多相同的地方，在这样的场合也会有一些。有时在在一起玩的时候，或者私下聚会的时候也会碰撞出工作上的一些东西。还有的话就是我们也有建立qq群，也会分很多。比如说现在这个学习平台的项目，一个是可以发布项目上的一些信息，另外一个就是大家可以在上面及时发布你的信息。比如说有一些招募的工作，或者有一些活动需要志愿者之类的这些很及时的就可以解决了。(SG3-01)

6 月份的时候是这样，它不是叫重组，它实际上是因为要转变这种运作的模式，因为在6月份以前，大家都是做志愿者，都是无偿的免费工作，到了那个时候呢大家在一起开过一个会，再讨论这样一个平台还有没有存在的必要。因为有一部分机构认为紧急阶段已经过去了，已经没有必要再要这个平台，各个机构自己自主自己在灾区设立工作站，自己去工作就可以了。但是还有一部分机构是另外一种看法，他们忍为呢，非常有必要，特别是一些外省的，和一些实力不太强的机构，他们就觉得非常有必要继续这个平台。如果没有这个平台的话，他们会非常困难。特别是外地的，因为当时地震发生一个多月马，全国很多个地的，各省的，NGO组织很多都在那个地方，还有很多都没来，外省的过来就特别的需要，他说你这个地方情况他不了解，所以在这种情况下大家又经过讨论之后，还是决定要（中心的）继续存在。那么就得考虑如果要继续存在的话，可能就不能再用前面的那个模式来运行。因为要用前面的那个模式来运行的话，那怎么来持续呢？他没办法持续对巴。所以就要改变这种运行的模式把。就要由志愿者模式转变为项目支持的模式。(SG3-02)

Appendix 5.1.CaseNGO24.3

NGO24-01：但是政府还有排斥（不重视）。其他的困难可以从以下几个方面理解：１）资金，２）ｎｇｏ本身的能力问题（专业能力建设， 则需要足够的人力和资金资源），3）可是很多团队的志愿者都是很关注短期的紧急救援阶段而且赶到灾区，可是真正关心长期的灾后重建的很少（包括政府）。

Appendix 5.1.5.08

NGO24-01-02

卢：那么应该怎样能够让政府重视起非政府组织的作用呢？
NGO24-01：其实政府已经逐渐开始转变了态度并且初步意识到 ngo 的重要性。比如在今年的十二五计划中就提出搞社会建设和其在防灾减灾过程中的重要性。其中提出政府的主要任务之一就是搞好与 ngo 合作及大社会的培养。我相信对 ngo 生存的大环境应该越来越好的。

Appendix 5.1.5.09

NGO51-01-03

“This program works in accordance with our earlier strategic plan, which is to assist the growth of smaller grassroots civil society groups/organizations. Back then, the number of civil society groups/organizations that focus on community services was very small. Some were involved in these activities but in general not in-depth participation in nature. So what we hope to do is to provide them with the opportunities by building a platform, and at the same time accompany them on their way to grow and develop. This is how we have nurtured the development of these civil society groups/organizations. After our programs are completed, we hope to see that they can stay in the area and continue providing community service related activities. Only then, our role will be performed and we can gradually withdraw. The needs of the communities in the area can then be met through their performance alone. This is one of our main goals.”
这个项目当初我们在社区的时候也是结合我们之前NPI 的战略规划，就是多培养一些初创期的社会组织起来。当时在成都这边做社区服务的社会组织并不多，有一些社会组织有介入，但是不够深入，那么我们就是希望通过我们给他们提供这样一个平台给他们一个机会，同时帮助他们一起成长。所以也是培育了当地的这样一些社会组织。在我们这个项目结束以后，我们希望这个社会组织能够留下来，在当地继续开展社区服务。这样的话我们的角色就可以退出来了，就可以把周边社区的需求满足了。这是我们的一个大的目标。

NGO51-01-02

“因为他们(当地的社会组织)在当地的操作和运作可能比我们要更方便一些，而且它也会对当地更加熟悉，运作起来的成熟度会比我们快”。(NGO51-01)

Appendix 5.1.CaseNGO51.2

NGO51-01：刚才我们谈到的“新家园”这种的，其实他也是我们第二期孵化器项目里的，跟他后续没有合作了，我们就不会再那么多精力的去培养他了。可能只是一些咨询的关系。他有什么问题我们会提供一些咨询。

卢：那你们最初在成都成立的时候就是想从事灾后重建的工作的吗？
NGO51-01：恩派当时在这里设立办公室可能是这样一个初衷，但是后来我们在成都注册民非之后我们就不仅仅的是在后重建这一块了，我们整个上海的那些项目都回引进来，像孵化器，社区服务平台，还有能力建设各方面我们都会做，

卢：那么那些被培养的对象都是属于合作的对象里， 而不是在沟通交流的对象里面是吗？比如说“新家园社工”，它只有沟通和交流，但是（你们和他们）没有和作，所以他就不是你们培养对象里面的是吗？就是说，培养对象必须是有和作为前提的吗？
NGO51-01：对，如果没有的话就是说他们没有参加我们的项目嘛。所以他们就不是。我明白你的意思了，

Appendix 5.1.5.10

NGO51-01-04

我们的培养对象是这样的。 一方面就是参与到我们的项目里面的，除了我们的诺基亚项目，我们在高新区也会引进一些社会组织，象这些和我们有和作关系的，我们都会努力去推进他们的成长。这是肯定的。还有一个就是我们孵化器的这个项目，孵化器本身着个项目本身就是培养社会组织，所以基本上和我们有关系的，我们都会去推动去培养他。

Appendix 5.1.5.11

NGO51-01-05

LU: So if earthquakes happened in other places, will the programs be expanded over there?
NGO51-01: Most likely. This is because the primary reason that we established another office here in Chengdu was due to the 5.12 earthquake. Before that, our general strategic

plan did include a plan to expand to this region, but not that fast. So the earthquake did trigger our action in establishing a field office here.
卢：那如果其他地方发生了地震的话，你们还会到那里扩展项目吗？
张：也有可能。因为当时成都这边就是因为512 地震过来的。我们之前在整个恩派的战略规划中可能也会涉及到会发展到这边来的，但是不可能是这么快，那可能就是因为512 这个事件引发了我们到这边成立办公室然后进入工作。
LU: For these actors that you have had communication relationships before, were they part of your training targets?
NGO51-01: This will depend on where they were in the phase of their development. For some, we started off by getting in touch, and then gradually had they joined our incubator program. For some others, their financial status was already being sustained and matured, and there was no need for us to incubate them, so we will not consider them anymore. This is why we specify the targets to be at their "initiation phase", and this has a lot to do with their stage of development.
卢：那比如说你们以前有交流的这些，他们属于你们被培养的对象里马？
张：这要看他发展的阶段是怎样的，有一些就是我们开始接触然后慢慢的让他们变成我们的孵化对象了。有一些，他们的资金已经比较成熟了，不需要我们去培养孵化了，我们就不会再考虑了。所以我们为什么说是"初创期"的，这也是和发展阶段有关系的。

Appendix 5.1.5.12

SG123-01-03
(Actor #125)是我自己为了找资金去北京找的。我比较喜欢私募基金会（相对公募基金会），像 ND 基金会，TX，还有很多非官方的基金会。原因是公募基金会现在很多倒像是官老爷们的基金会，如果一旦加入他们向他们申请钱，就会被他们利用反而成为他们（公募基金会的摇钱树），申请下来的钱他们要从中扣去很多，鼓了他们自己的腰包，留下来真正给我们的会少了。一基金这样的私募基金会是比较想做些实际事情的，他们工作人员的工资都是李**本人给的。

Appendix 5.1.CaseSG123.4

LU：为什么和512救灾中心只在紧急救援阶段有联系，但是之后就没有了呢？

SG123-01：我后来发现 512 的作用也没有那么的大，他们只是通知我们开会，通知有讲课，但是所讲的内容实在是很理论，和实际状况很脱节，离实际也很遥远。我觉得他们唯一的作用就是起到了一个接线员的作用。比如那一家组织想联系其它组织，他们可以提供相关的信息。仅此而已。（512 中心如果要想改进一下能更加起到作用）， 应该是如果团队们同时对某种项目感兴趣，可以各自派出人互相学习。或者采取队员互换的形式从而实现互补工作和学习经验交流的目标。

Appendix 5.1.CaseSG97.4

卢： 你们和恩派那边最初是怎么开始或者认识的呢？
SG97-01：我们开始直到恩派在做什么，也了解，正好它对外有这个机会嘛，就是你可以写申请孵化，它们筛选，它们给了我们一年的钱，我们从２０１０ 年 9 月开始的，到今年 9 月截至.

卢：那截至之后你们怎么办呢？
SG97-01：我们继续自己做自己的事啊。

卢：你们和其他Ngo有合作的项目吗？
SG97-01：具体的和作有。就是那个“老年会”（听不清是具体是什么名字，但是这个组织不在我的调研列表中），因为社区里面糖尿病老人的互助组织是我们帮他们做吗，还有就是“爱有戏”在邀请我们帮他们做健康方面的，但是我们目前还没有开始做。他是这么跟我们约的，让我们给他们做健康板块，但是现在还没有到那个时间点开始做。

卢：你们和512 中心那个怎么联系上的呢？你们怎么知道他们的呢？
汪：其实是我的一个朋友跟郭老师很熟，然后他们是邀请我们去参加他们的定期的培训，因为郭老师也是致力于想通过这个培训给大家一个平台马，就是可以互相交流的平台， 因为很多参加的都是 我的朋友，然后大家想不如一起参加培训顺便大家可以交流一下。

SG97-01：国内NGO和国际NGO之间平时是不太扎堆在一起的，我自己就有很明显的感觉。各玩各的方式，真的是差别挺大的，他们的作法和定位点都不一样，可能大家觉得共同语言也不多巴。你像这圈我们联系多的，都是自己国内的NGO， 但并不是刻意的区根国际的在一起。像小母牛(Actor #61)虽然是国外的，但是它也

已经在国内注册了，所以运作就不一样了。 我自己是做过国际NGO的，他们的理念和作法真的是不太一样。管理和运作方式都不一样。所以和作也很少。

Appendix 5.1.5.13

SG97-01-07

汪：钱就通过其他的活动项目阿，比如说我们给别的机构作这种支持的时候其实也是有费用的马。而且我们现在也在努力通过社区让它承担一部分费用，我们现在也在往这个方向努力，就是说前期你得先做出它认可的效果，然后后期社区还比较认同，他也会说即使我不能给你打的支持，小的支持也还是可以的。因为之前我们的社区的印刷资料就是社区给的钱印的。挺好，他的能力范围内能够帮助我们的。

Appendix 5.1.5.14

SG97-01-08

但是 512 这个定位不一样，可能就是定位在不同的板块和不同的人群，作这样一种公民意识的培养把。我参加几次给我的感觉就是他们有一个板块就是给你讲一些公民概念，但是他们有不会刻意把它做的特别重，因为大家还是要做事情的，所以还是会有一些实用性 的案例阿，或者主体讨论阿之类的。所以他们也在摸索。

Appendix 5.1.5.15

SG97-01-09

卢: 那你们觉得（512）的这种信息平台作的怎么样呢？或者是对于你们来说，什么样的信息平台是你们所希望的呢？

汪：其实要看他怎么定位，我之前也跟郭老师他们聊过，他们现在的定位可能也是项目限制吗，就可能你看了针对性不强，每次都比较散，你看主题和主题之间分割是挺大的，但是他们的目的主要就是做一个交流平台，所以他们某方面说确实缺少一些系统性。 比如说像我们参加中大的那个行政研究，那个就比较有系统性。

Appendix 5.1.5.16

SG97-01-10

有很多国际NGO是以救援为主的，哪肯定就是短期性的， 救援完了你该走就走了，因为你的定位就是那个样子的阿。国内的Ｎｇｏ特别是在四川，都是四川本地化的，是长远性的，所以不一样。而且现在很多都在转型，基本上都是以发展型来转。本地的NGO关注的是本地的人，所以是它一定是做发展和长远性的东西，而实际上地震他只是一个突发事件，因为这个时间引发了这么多的国际NGO来，但是这些不管是国内国外的救援的机构都会撤走，因为这个事件已经慢慢的这么久了吗，重心就不是这样的了，你看现在的NGO少这么多也是必然的阿，因为你救援的这个事件已经完了吗，那你就没有必要待在这里了。那留下来的更多的就是本地化发展的机构。四川本地的或者是国内的，但是它重点必然是以人的发展本身为主的。而不是为绕着以救援为主的了。没有必要一天到晚都带在这里，救什么啊，该救的都救完了，该修的也修完了。

Appendix 5.1.5.17

NGOLF-01-04

我们就是有一个重点嘛，我们的服务的对象，那些直接的对象就是青少年了，但是我们最多接触的其实是那些志愿者或者是那些老师，就是一些师资方面的，包括我们在灾区也是这样的，更多的就是跟他们的学校或者是跟他们的那些教育单位联系比较多，给他们去联络，当然有的时候也是跟当地的服务的组织联络，但是有的时候也是跟学校在联络，因为我们最终的对象是青少年，我们自己有时候也会针对青少年开展一些活动，但是在更多的时候我们觉得是推动这个事情可能会更好一些。因为我们自己毕竟没有太大的力量能够做很多的事情，但是我们可以。。。因为我们这个平台就是说我们逊在就会联系到很多不同的系统，我们所说的“交流”中心，

Appendix 5.1.CaseNGOLF.2

NGOLF：应该说这个整个地震以后，对非政府组织的发展肯定是一个促进的作用，以前大家都完全没有这个概念。比如说我们去灾区作事情的时候，假如不发生地震的话，我们根本无法想象我们可以用这种身份去一些农村里面去做一些事情，但是现在就算是再偏僻的地方它都会有这个概念，就是说这些是志愿者来服务的阿，他们也比较容易接受了，整个来说是一个很大的促进。

卢：那您的组织和512中心的工作有什么区别呢？
NGOLF：我理解是他们可能更广一点，因为我们一直比较关注青少年的教育阿，或者家庭教育相关的，因为我们在那个过程当中，有一些课程我们一直在帮他们操作，我们已经积累一些老师和志愿者可以去很熟练的去操作那些课程，我们现在像跟武侯青少年空间跟他们有比较多的合作，他们也是做青少年的嘛，他们是直接政府资助的，在社区开青少年中心，我们就跟它有很多的合作，他们的很多课其实就是我们派的志愿者，或者是我们在训练他们的那些老师。他们就是去管理。
…我们的范围主要集中的青少年这个方面，512 中心那边主要就是比较广…

Appendix V. Chapter 5 (Part II) Appendices

Appendix 5.2.1

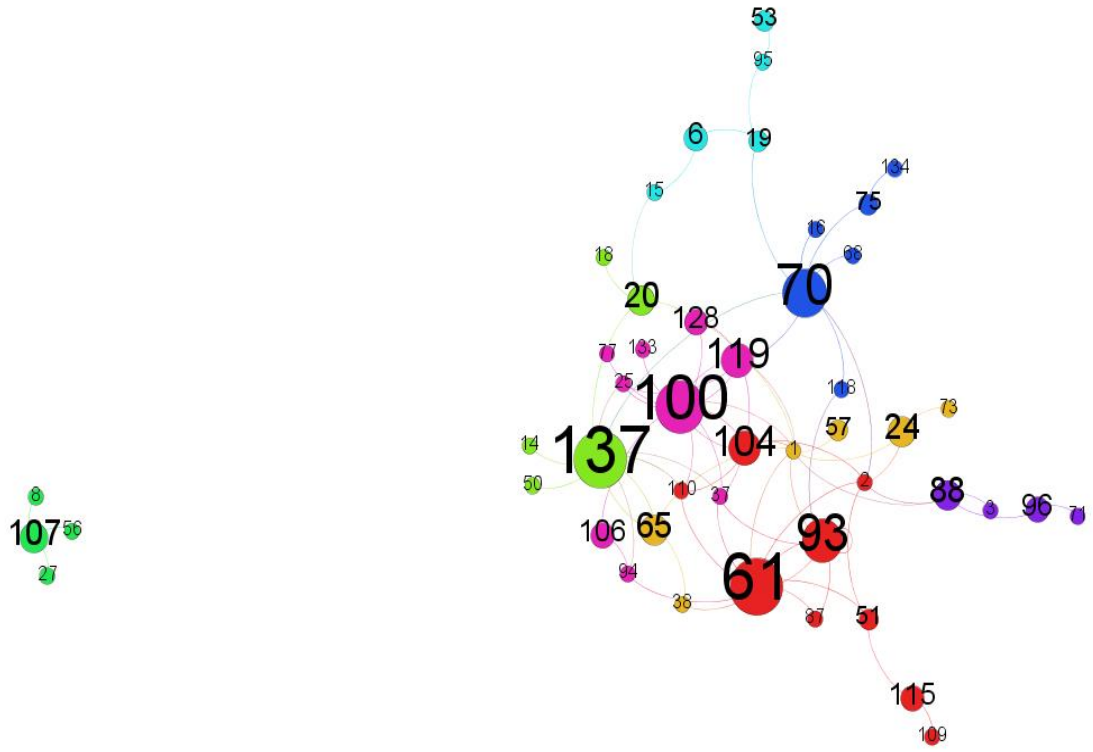
Triadic Relationships in Collaboration Networks

Table 5.2.1. Transitivity Measures

	$\{AB, BC, AC\}$	$\{AB, BC, anything\}$	# of triples of all kinds	% of $\{AB, BC, AC\}$	Transitivity
t1	19	84	2571216	0.00%	22.62%
t2	148	765	2571216	0.01%	19.35%
t3	300	1538	2571216	0.01%	19.51%

Appendix 5.2.2

(A)



Size: Out-degree; Color: Communities

Figure A.5.2.2*A*. Pre-earthquake Community Structure Detection (Collaboration Network)-(Blondel et al., 2008)

Appendix 5.2.2

(B)

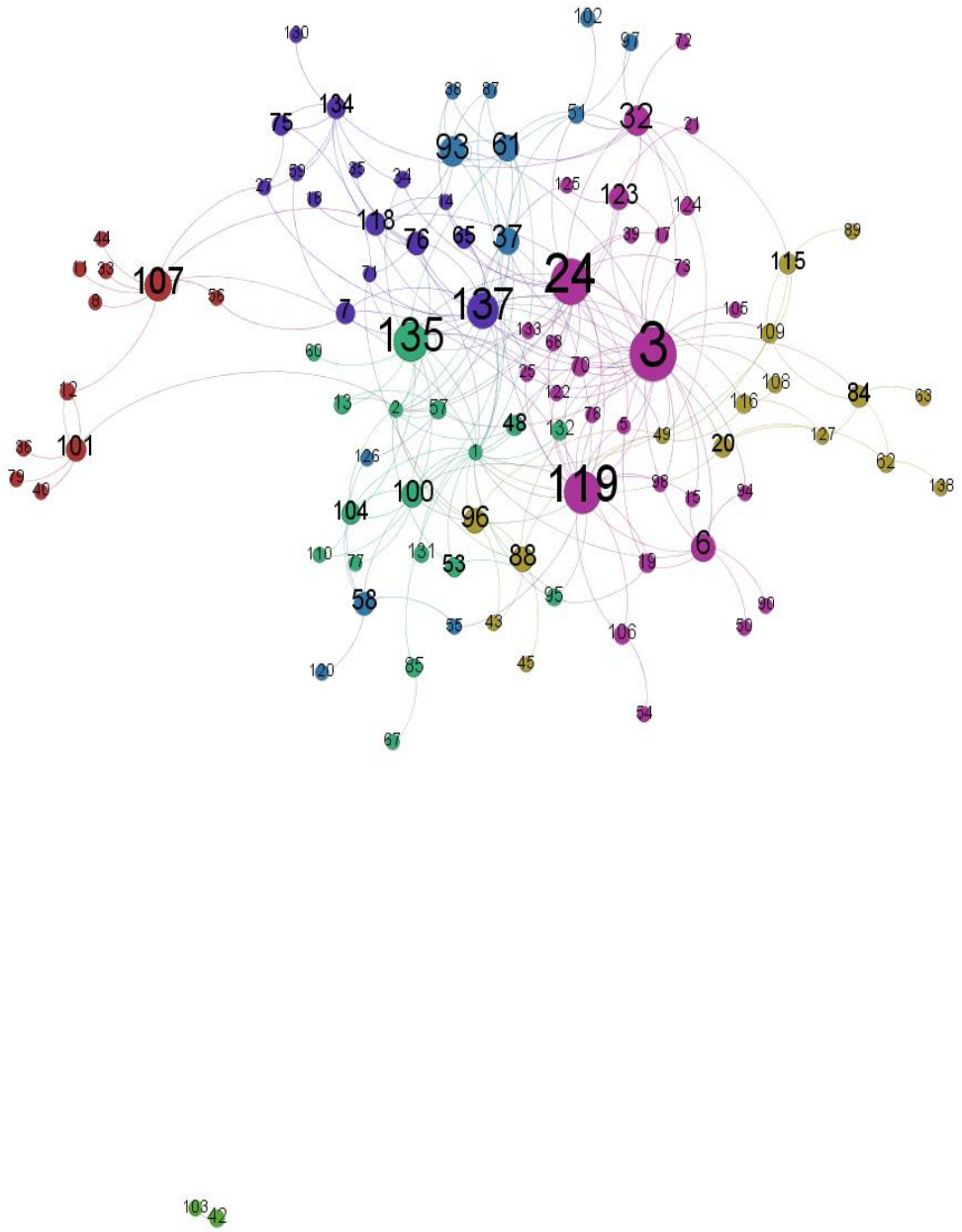
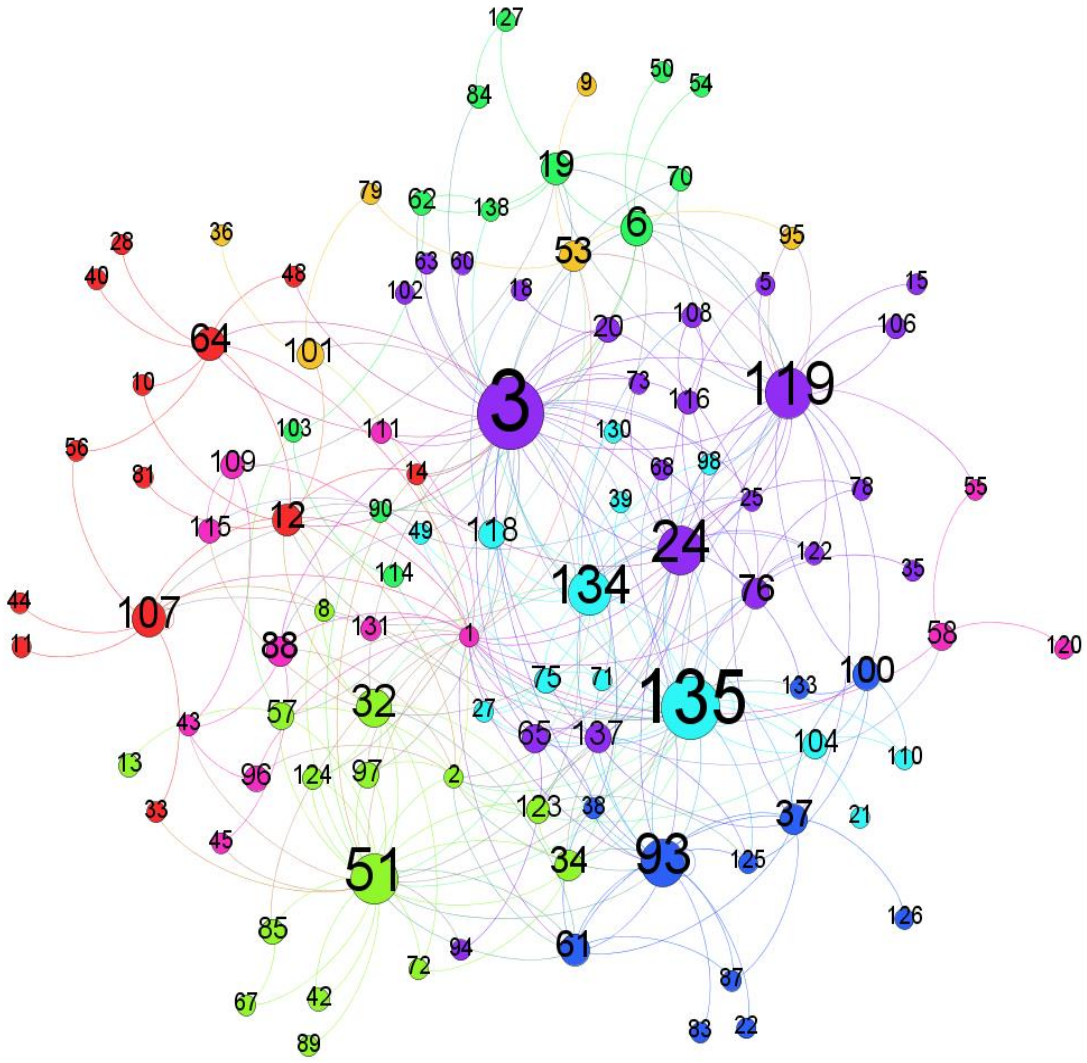


Figure A.5.2.2*B*. Emergency Response Community Structure Detection (Collaboration Network)-(Blondel et al., 2008)

Appendix 5.2.2

(C)



Size: Out-degree; Color: Communities

Figure A.5.2.2*C*. Recovery Community Structure Detection (Collaboration Network)-(Blondel et al., 2008)

Appendix 5.2.3*A1*

Sample Comparison of Node Clustering Coefficient

Pre-earthquake

Communication

Node Clustering Coefficients

		1 Clus Coef	2 nPairs
1	1	0.164	55.000
2	10		0.000
3	100	0.114	153.000
4	101		0.000
5	102		0.000
6	103		0.000
7	104	0.267	15.000
8	105		0.000
9	106	0.381	21.000
10	107	0.071	21.000
11	108	0.125	36.000
12	109	0.500	3.000
13	11		0.000
14	110	0.400	10.000
15	111		0.000
16	112		0.000
17	113		0.000
18	114		0.000
19	115	0.033	153.000
20	116	0.333	3.000
21	117		0.000
22	118	0.232	28.000
23	119	0.188	136.000
24	12		0.000
25	120		0.000
26	121		0.000
27	122		0.000
28	123	0.000	1.000
29	124		0.000
30	125		0.000
31	126	0.500	1.000
32	127		0.000
33	128	0.500	6.000
34	129		0.000
35	13		0.000
36	130		0.000
37	131		0.000
38	132		0.000
39	133	0.000	1.000
40	134	0.208	36.000
41	135		0.000
42	136		0.000
43	137	0.102	171.000
44	138		0.000
45	14	0.550	10.000
46	15	0.833	3.000
47	16		0.000

Collaboration

Node Clustering Coefficients

		1 Clus Coef	2 nPairs
1	1	0.067	45.000
2	10		0.000
3	100	0.067	45.000
4	101		0.000
5	102		0.000
6	103		0.000
7	104	0.167	6.000
8	105		0.000
9	106	0.000	1.000
10	107	0.000	3.000
11	108		0.000
12	109		0.000
13	11		0.000
14	110	0.167	6.000
15	111		0.000
16	112		0.000
17	113		0.000
18	114		0.000
19	115	0.000	1.000
20	116		0.000
21	117		0.000
22	118	0.000	1.000
23	119	0.133	15.000
24	12		0.000
25	120		0.000
26	121		0.000
27	122		0.000
28	123		0.000
29	124		0.000
30	125		0.000
31	126		0.000
32	127		0.000
33	128	1.000	1.000
34	129		0.000
35	13		0.000
36	130		0.000
37	131		0.000
38	132		0.000
39	133		0.000
40	134		0.000
41	135		0.000
42	136		0.000
43	137	0.000	36.000
44	138		0.000
45	14		0.000
46	15	0.000	1.000
47	16		0.000

Appendix 5.2.3*A2*

Sample Comparison of Node Clustering Coefficient

Emergency Response

Communication

		1 Clus Coef	2 nPairs
1	1	0.150	496.000
2	10	0.550	10.000
3	100	0.255	300.000
4	101	0.167	78.000
5	102	0.417	36.000
6	103	0.450	10.000
7	104	0.429	78.000
8	105	0.600	10.000
9	106	0.569	36.000
10	107	0.144	703.000
11	108	0.447	66.000
12	109	0.246	406.000
13	11	0.567	15.000
14	110	0.564	55.000
15	111	0.550	10.000
16	112	0.583	6.000
17	113	0.433	15.000
18	114	0.464	28.000
19	115	0.353	78.000
20	116	0.476	21.000
21	117	0.500	1.000
22	118	0.371	136.000
23	119	0.306	276.000
24	12	0.476	21.000
25	120	0.304	28.000
26	121	0.500	3.000
27	122	0.536	55.000
28	123	0.166	561.000
29	124	0.679	28.000
30	125	0.425	120.000
31	126	0.375	36.000
32	127	0.472	36.000
33	128	0.650	10.000
34	129	0.700	10.000
35	13	0.571	21.000
36	130	0.554	28.000
37	131	0.367	15.000
38	132	0.171	210.000
39	133	0.600	10.000
40	134	0.266	351.000
41	135	0.171	820.000
42	136	0.667	3.000
43	137	0.187	630.000
44	138	0.500	1.000
45	14	0.457	105.000
46	15	0.500	55.000
47	16		0.000
48	17	0.750	10.000

Collaboration

		1 Clus Coef	2 nPairs
1	1	0.042	276.000
2	10		0.000
3	100	0.125	28.000
4	101	0.000	10.000
5	102		0.000
6	103		0.000
7	104	0.200	15.000
8	105		0.000
9	106	0.000	1.000
10	107	0.014	36.000
11	108	0.000	1.000
12	109	0.083	6.000
13	11		0.000
14	110	1.000	1.000
15	111		0.000
16	112		0.000
17	113		0.000
18	114		0.000
19	115	0.000	6.000
20	116	0.083	6.000
21	117		0.000
22	118	0.097	36.000
23	119	0.076	171.000
24	12	0.000	1.000
25	120		0.000
26	121		0.000
27	122	0.667	6.000
28	123	0.048	21.000
29	124	0.250	6.000
30	125	0.000	1.000
31	126	0.000	1.000
32	127	0.000	3.000
33	128		0.000
34	129		0.000
35	13	0.500	3.000
36	130		0.000
37	131		0.000
38	132	0.000	1.000
39	133	0.000	3.000
40	134	0.036	28.000
41	135	0.088	91.000
42	136		0.000
43	137	0.044	91.000
44	138		0.000
45	14	0.000	1.000
46	15	0.833	3.000
47	16		0.000
48	17	0.500	3.000

Appendix 5.2.3*A3*

Sample Comparison of Node Clustering Coefficient

Recovery

Communication

		1 Clus Coef	2 nPairs
1	1	0.189	465.000
2	10	0.700	10.000
3	100	0.179	276.000
4	101	0.160	210.000
5	102	0.500	6.000
6	103	0.417	6.000
7	104	0.378	78.000
8	105	0.667	3.000
9	106	0.667	36.000
10	107	0.101	528.000
11	108	0.423	78.000
12	109	0.274	351.000
13	11	0.595	21.000
14	110	0.526	78.000
15	111	0.257	210.000
16	112	1.000	1.000
17	113	0.750	6.000
18	114	0.482	28.000
19	115	0.429	78.000
20	116	0.500	45.000
21	117	1.000	1.000
22	118	0.401	171.000
23	119	0.220	435.000
24	12	0.200	703.000
25	120	0.433	15.000
26	121	0.650	10.000
27	122	0.694	36.000
28	123	0.211	630.000
29	124	0.336	171.000
30	125	0.421	120.000
31	126	0.514	36.000
32	127	0.472	36.000
33	128	0.550	10.000
34	129	0.700	15.000
35	13	0.486	36.000
36	130	0.700	15.000
37	131	0.333	3.000
38	132	0.098	153.000
39	133	0.583	6.000
40	134	0.362	276.000
41	135	0.128	2080.000
42	136	0.850	10.000
43	137	0.291	406.000
44	138	0.536	28.000
45	14	0.485	136.000
46	15	0.750	28.000
47	16	0.667	3.000
48	17	0.500	36.000

Collaboration

		1 Clus Coef	2 nPairs
1	1	0.060	325.000
2	10	0.500	1.000
3	100	0.119	21.000
4	101	0.100	10.000
5	102		0.000
6	103	0.000	3.000
7	104	0.200	15.000
8	105		0.000
9	106		0.000
10	107	0.042	36.000
11	108	0.300	10.000
12	109	0.000	6.000
13	11		0.000
14	110	0.500	3.000
15	111	0.000	1.000
16	112		0.000
17	113		0.000
18	114	0.000	1.000
19	115	0.000	3.000
20	116	0.250	6.000
21	117		0.000
22	118	0.194	36.000
23	119	0.061	231.000
24	12	0.103	78.000
25	120		0.000
26	121		0.000
27	122	0.400	10.000
28	123	0.196	28.000
29	124	0.333	3.000
30	125	0.200	10.000
31	126		0.000
32	127	0.000	1.000
33	128		0.000
34	129		0.000
35	13		0.000
36	130	0.500	1.000
37	131		0.000
38	132		0.000
39	133	0.000	3.000
40	134	0.123	171.000
41	135	0.103	325.000
42	136		0.000
43	137	0.111	36.000
44	138	0.167	3.000
45	14	0.233	15.000
46	15		0.000
47	16		0.000
48	17		0.000

Appendix 5.2.3*B1*

Sample of Strong Components (Collaboration Network)

Pre-earthquake

COMPONENTS

Input dataset:

Kind of Components: STRONG

134 components found.

Component Sizes

Component	Nodes	Proportion
1	1	0.007
2	1	0.007
3	3	0.022
4	1	0.007
5	1	0.007
6	1	0.007
7	1	0.007
8	1	0.007
9	1	0.007
10	1	0.007
11	1	0.007
12	1	0.007
13	1	0.007
14	1	0.007
15	1	0.007
16	1	0.007
17	1	0.007
18	1	0.007
19	1	0.007
20	1	0.007
21	1	0.007
22	1	0.007
23	1	0.007
24	1	0.007
25	1	0.007
26	1	0.007
27	1	0.007
28	1	0.007
29	1	0.007
30	1	0.007
31	1	0.007
32	1	0.007
33	1	0.007
34	1	0.007
35	1	0.007
36	1	0.007
37	1	0.007
38	1	0.007

Appendix 5.2.3*B2*

Sample of Weak Components (Collaboration Network)

Pre-earthquake

COMPONENTS

Input dataset:

Kind of Components: WEAK

92 components found.

Component Sizes

Component	Nodes	Proportion
1	44	0.319
2	1	0.007
3	1	0.007
4	1	0.007
5	1	0.007
6	1	0.007
7	4	0.029
8	1	0.007
9	1	0.007
10	1	0.007
11	1	0.007
12	1	0.007
13	1	0.007
14	1	0.007
15	1	0.007
16	1	0.007
17	1	0.007
18	1	0.007
19	1	0.007
20	1	0.007
21	1	0.007
22	1	0.007
23	1	0.007
24	1	0.007
25	1	0.007
26	1	0.007
27	1	0.007
28	1	0.007
29	1	0.007
30	1	0.007
31	1	0.007
32	1	0.007
33	1	0.007
34	1	0.007
35	1	0.007
36	1	0.007
37	1	0.007
38	1	0.007

Appendix 5.2.3*C1*

Sample of Strong Components (Collaboration Network)

Emergency Response

COMPONENTS

Input dataset:

Kind of Components: STRONG

117 components found.

Component Sizes

Component	Nodes	Proportion
1	1	0.007
2	1	0.007
3	19	0.138
4	2	0.014
5	1	0.007
6	1	0.007
7	1	0.007
8	1	0.007
9	1	0.007
10	2	0.014
11	1	0.007
12	1	0.007
13	1	0.007
14	1	0.007
15	1	0.007
16	1	0.007
17	1	0.007
18	1	0.007
19	1	0.007
20	1	0.007
21	1	0.007
22	1	0.007
23	1	0.007
24	1	0.007
25	1	0.007
26	1	0.007
27	1	0.007
28	1	0.007
29	1	0.007
30	1	0.007
31	1	0.007
32	1	0.007
33	1	0.007
34	2	0.014
35	1	0.007
36	1	0.007
37	1	0.007
38	1	0.007

Appendix 5.2.3*C2*

Sample of Weak Components (Collaboration Network)

Emergency Response

COMPONENTS

Input dataset:

Kind of Components: WEAK

38 components found.

Component Sizes

Component	Nodes	Proportion
1	100	0.725
2	1	0.007
3	2	0.014
4	1	0.007
5	1	0.007
6	1	0.007
7	1	0.007
8	1	0.007
9	1	0.007
10	1	0.007
11	1	0.007
12	1	0.007
13	1	0.007
14	1	0.007
15	1	0.007
16	1	0.007
17	1	0.007
18	1	0.007
19	1	0.007
20	1	0.007
21	1	0.007
22	1	0.007
23	1	0.007
24	1	0.007
25	1	0.007
26	1	0.007
27	1	0.007
28	1	0.007
29	1	0.007
30	1	0.007
31	1	0.007
32	1	0.007
33	1	0.007
34	1	0.007
35	1	0.007
36	1	0.007
37	1	0.007
38	1	0.007

Appendix 5.2.3*D1*

Sample of Strong Components (Collaboration Network)

Recovery

COMPONENTS

Input dataset:

Kind of Components: STRONG

108 components found.

Component Sizes

Component	Nodes	Proportion
1	1	0.007
2	1	0.007
3	30	0.217
4	1	0.007
5	1	0.007
6	1	0.007
7	1	0.007
8	1	0.007
9	2	0.014
10	1	0.007
11	1	0.007
12	1	0.007
13	1	0.007
14	1	0.007
15	1	0.007
16	1	0.007
17	1	0.007
18	1	0.007
19	1	0.007
20	1	0.007
21	1	0.007
22	1	0.007
23	1	0.007
24	1	0.007
25	1	0.007
26	1	0.007
27	1	0.007
28	1	0.007
29	1	0.007
30	1	0.007
31	1	0.007
32	1	0.007
33	1	0.007
34	1	0.007
35	1	0.007
36	1	0.007
37	1	0.007
38	1	0.007

Appendix 5.2.3*D2*

Sample of Weak Components (Collaboration Network)

Recovery

COMPONENTS

Input dataset:

Kind of Components: WEAK

34 components found.

Component Sizes

Component	Nodes	Proportion
1	105	0.761
2	1	0.007
3	1	0.007
4	1	0.007
5	1	0.007
6	1	0.007
7	1	0.007
8	1	0.007
9	1	0.007
10	1	0.007
11	1	0.007
12	1	0.007
13	1	0.007
14	1	0.007
15	1	0.007
16	1	0.007
17	1	0.007
18	1	0.007
19	1	0.007
20	1	0.007
21	1	0.007
22	1	0.007
23	1	0.007
24	1	0.007
25	1	0.007
26	1	0.007
27	1	0.007
28	1	0.007
29	1	0.007
30	1	0.007
31	1	0.007
32	1	0.007
33	1	0.007
34	1	0.007

Appendix 5.2.3*E1*

2-Clan Membership (Collaboration Network)

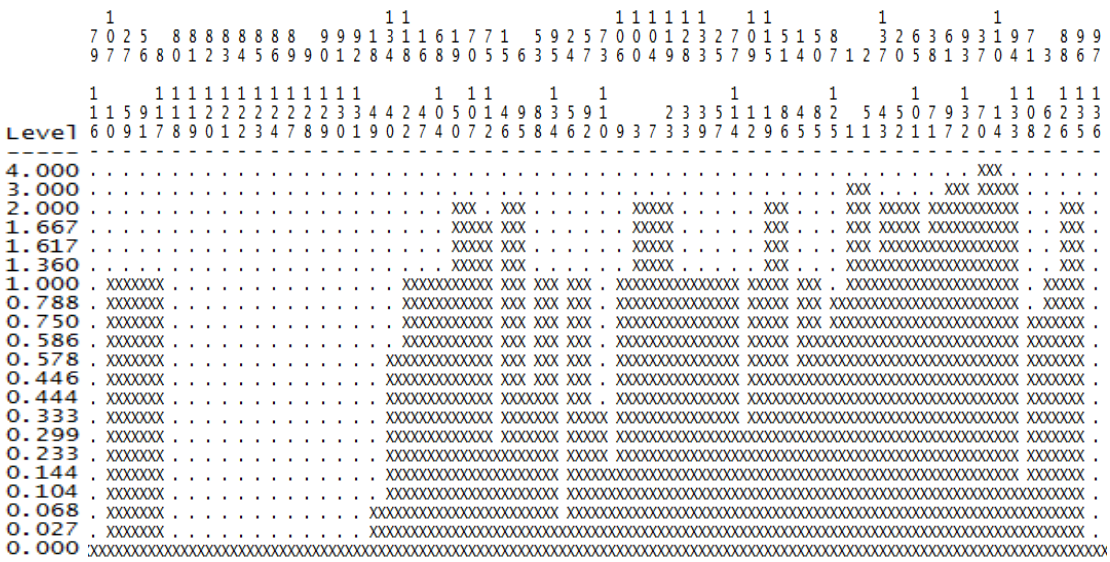
Pre-earthquake

```
N-CLANS
-------------------------------------------------

Max Distance (n-):                      2
Minimum Set Size:                       3
Input dataset:                          colla138_pr

WARNING: Directed graph. Direction of arcs ignored.
18 2-clans found.

   1:  1 100 104 106 110 119 128 133 25 37 77
   2:  1 110 2 37 38 51 61 87 93 94
   3:  1 110 137 37 38 61 65 93 94
   4:  1 137 15 18 20
   5:  1 100 104 119 20 24 57 61 65 88 93
   6:  1 2 24 73
   7:  1 2 3 88 96
   8:  107 27 56 8
   9:  109 115 51
  10:  115 2 51 61
  11:  134 70 75
  12:  110 137 14 20 25 37 50 65 70 94
  13:  118 119 137 16 19 2 68 70 75
  14:  19 6 70 95
  15:  15 19 6
  16:  19 53 95
  17:  15 20 6
  18:  71 88 96
```

Appendix 5.2.3*E2*

Sample of actor-by-actor HIERARCHICAL CLUSTERING OF OVERLAP MATRIX (Collaboration Network)

Pre-earthquake



Appendix 5.2.3*F1*

Sample 2-Clan Membership (Collaboration Network)

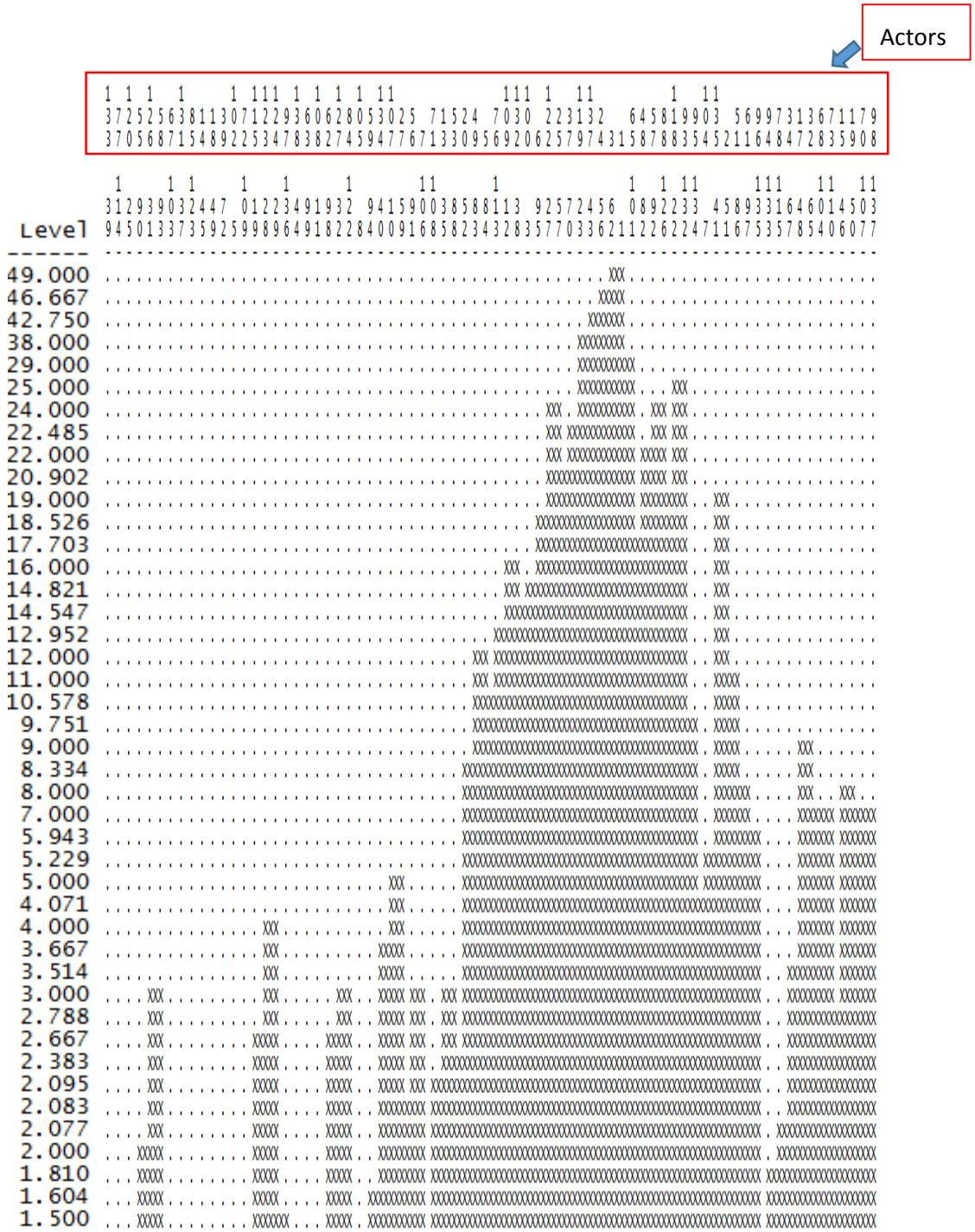
Emergency Response

```
N-CLANS
-------------------------------------------------------------------------------

Max Distance (n-):                      2
Minimum Set Size:                       3
Input dataset:                          colla138_emergency_updated (C:\Users\admin\Documents\Dis

WARNING: Directed graph. Direction of arcs ignored.
86 2-clans found.

   1:  1 109 118 119 122 132 137 15 17 19 24 25 3 32 37 48 49 5 57 6 68 70 73 76 84 88 93 94 98
   2:  1 100 109 118 119 122 132 137 15 19 24 25 3 37 48 49 5 57 6 70 88 93 95 98
   3:  1 100 119 122 137 15 19 24 25 3 37 49 5 6 7 70 95 98
   4:  1 119 122 137 15 19 24 25 3 37 49 5 6 7 70 76 98
   5:  1 100 106 119 122 15 19 24 25 3 37 49 5 55 6 7 70 78 95 98
   6:  1 119 122 15 17 19 24 25 3 32 37 49 5 6 68 70 73 78 98
   7:  1 109 118 119 122 132 137 17 24 25 3 32 37 48 49 5 57 6 65 68 73 76 88 93
   8:  1 100 109 118 119 122 132 137 24 25 3 37 48 49 5 57 6 65 88 93 95
   9:  1 100 119 122 137 24 25 3 37 49 5 6 65 7 95
  10:  1 119 122 137 24 25 3 37 49 5 6 65 7 76
  11:  1 119 122 137 2 24 25 3 37 49 5 65 7 76
  12:  1 100 109 118 119 122 132 135 137 24 25 3 37 48 5 57 6 65 68 88 93
  13:  1 100 109 118 119 122 132 135 137 24 25 3 37 48 5 57 6 65 88 93 95
  14:  1 119 122 133 135 14 17 2 24 25 3 32 34 39 5 51 65 68 73 78
  15:  1 118 119 122 14 17 24 25 3 32 5 68 70 73 76 93
  16:  1 119 122 135 17 2 24 25 3 32 34 5 51 57 65 68 73
  17:  1 100 119 122 133 135 2 24 25 3 34 5 51 65 68 78
  18:  1 100 119 122 135 2 24 25 3 34 5 51 57 65 68
  19:  1 100 109 118 119 132 135 137 20 24 25 3 37 48 57 6 65 88 93 95
  20:  1 100 109 118 119 132 137 20 24 25 3 37 48 49 57 6 65 88 93 95
  21:  1 109 118 119 132 137 20 24 25 3 37 48 49 57 6 65 76 88 93
  22:  1 119 137 2 20 24 25 3 37 49 65 7 76
  23:  1 100 119 137 20 24 25 3 37 49 6 65 7 95
  24:  1 119 137 20 24 25 3 37 49 6 65 7 76
  25:  1 109 115 119 137 24 3 32 49 84 88
  26:  1 100 107 109 118 119 132 135 137 20 24 3 48 57 6 61 65 88 93 95 96
  27:  1 100 107 109 118 119 132 137 24 3 48 57 6 70 88 93 95
  28:  1 107 109 118 119 132 137 24 3 48 57 6 70 76 88 93
  29:  1 107 118 119 14 24 3 70 76 93
  30:  1 100 109 118 119 132 135 137 20 24 3 37 48 57 6 61 65 88 93 95
  31:  1 118 119 135 137 2 20 24 3 48 57 61 65 76 88 93 96
  32:  1 100 119 135 137 2 24 3 37 51 57 61 65 93
  33:  1 119 135 137 2 24 3 32 37 51 57 61 65 93
  34:  1 100 109 118 119 132 137 20 24 3 48 49 57 6 65 88 93 95 96
  35:  1 119 15 19 3 50 6 90 94
  36:  1 116 125 137 2 20 25 27 3 37 49 65 7 71 76
  37:  1 109 127 137 20 3 62 84
  38:  1 122 13 135 137 2 24 25 3 48 57 68 76 88
  39:  1 118 134 137 24 3 32 70 76 93
  40:  1 118 134 135 14 2 24 3 32 34 76
  41:  1 118 134 14 24 3 32 70 76 93
  42:  1 107 118 134 14 18 3 70 76 93
```

Appendix 5.2.3*F2*

Sample of actor-by-actor HIERARCHICAL CLUSTERING OF OVERLAP MATRIX
(Collaboration Network)

Emergency Response



Appendix 5.2.3*G1*

Sample 2-Clan Membership (Collaboration Network)

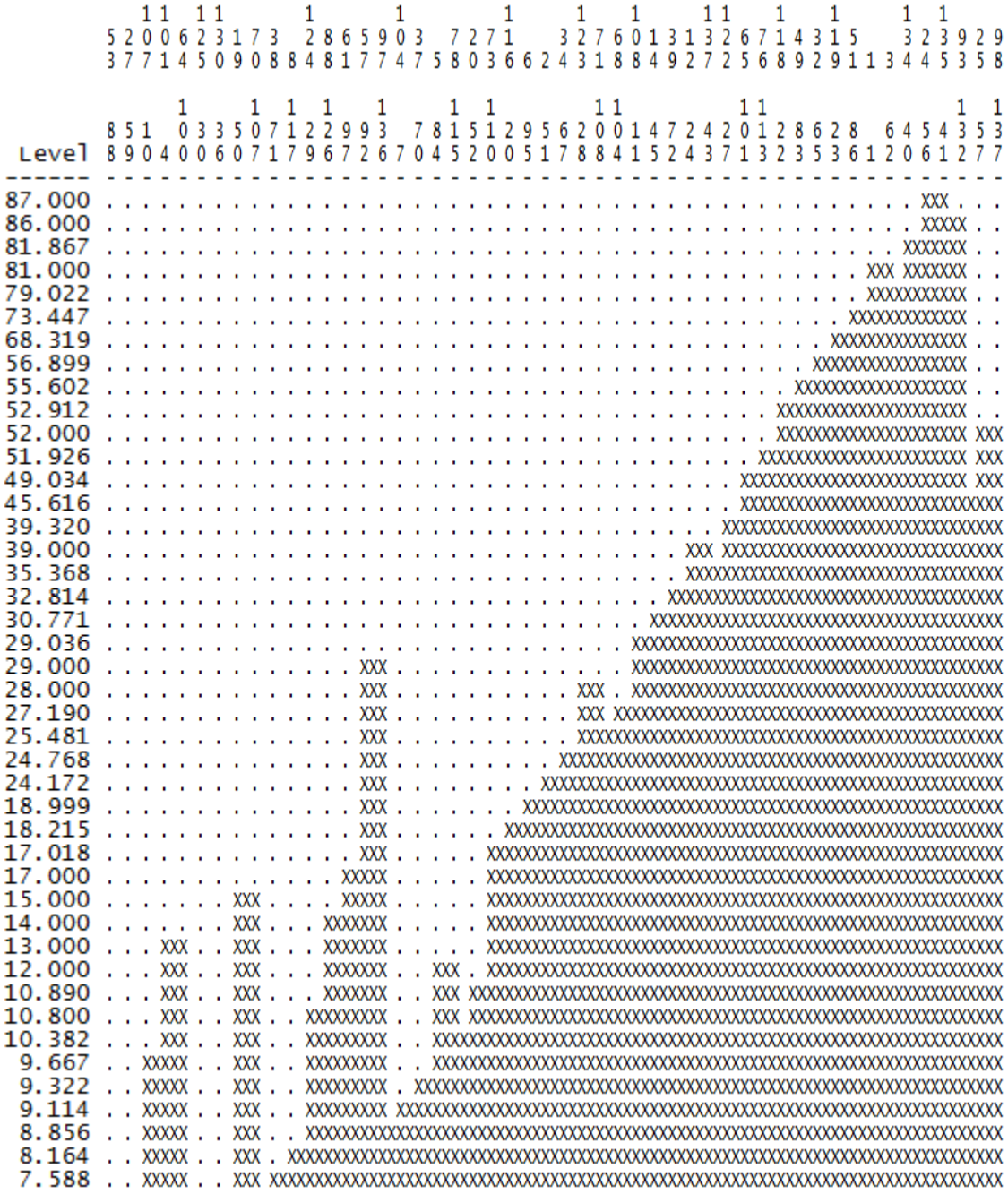
Recovery

```
N-CLANS
--------------------------------------------------------------------------------

Max Distance (n-):                      2
Minimum Set Size:                       3
Input dataset:                          colla138_recovery_updated (C:\Users\admin\Documents\Dissertation Data

WARNING: Directed graph. Direction of arcs ignored.
109 2-clans found.

   1:  1 108 116 118 119 12 123 124 134 135 137 14 20 24 25 3 32 34 38 39 49 51 57 65 68 71 73 76 93 97 98
   2:  1 108 116 118 119 12 122 123 134 135 137 14 20 24 25 3 32 39 49 51 6 65 68 71 73 76 93 98
   3:  1 108 116 118 119 12 122 123 134 135 137 14 20 24 25 3 32 34 39 49 51 65 68 71 73 76 93 98
   4:  1 101 116 118 119 12 123 124 134 135 137 14 2 24 25 3 32 38 39 49 51 57 64 65 68 71 73 76 88 93 97 98
   5:  1 116 118 119 12 123 124 134 135 137 14 2 24 25 3 32 34 38 39 49 51 57 65 68 71 73 76 93 97 98
   6:  1 116 118 119 12 122 123 134 135 137 14 2 24 25 3 32 34 39 49 51 65 68 71 73 76 93 98
   7:  1 116 118 119 12 123 125 134 135 137 2 24 25 3 32 34 38 39 49 51 65 68 71 76 93 98
   8:  1 116 118 119 12 122 123 125 134 135 137 2 24 25 3 32 34 39 49 51 65 68 71 76 93 98
   9:  1 101 104 118 119 12 123 134 135 137 2 24 25 3 39 49 51 57 64 65 68 71 76 88 93 97 98
  10:  1 104 118 119 12 123 134 135 137 2 24 25 3 34 39 49 51 57 65 68 71 76 93 97 98
  11:  1 104 118 119 12 122 123 125 134 135 137 2 24 25 3 34 39 49 51 65 68 71 76 93 98
  12:  1 104 118 119 12 122 123 134 135 137 24 25 3 39 49 51 6 65 68 71 76 93 98
  13:  1 104 110 114 118 12 122 123 125 134 135 137 2 21 24 25 27 3 34 39 49 51 68 71 76 93 98
  14:  1 116 118 12 122 123 125 134 135 137 2 24 25 27 3 32 34 39 49 51 65 68 71 76 93 98
  15:  1 104 118 12 122 123 125 134 135 137 2 24 25 27 3 34 39 49 51 65 68 71 76 93 98
  16:  1 101 118 119 12 123 124 134 135 137 14 2 24 3 32 38 51 57 61 64 65 71 76 88 93 97
  17:  1 101 104 118 119 12 123 134 135 137 2 24 3 51 57 61 64 65 71 76 88 93 97
  18:  1 118 119 12 123 124 134 135 137 14 2 24 3 32 34 38 51 57 61 65 71 76 93 97
  19:  1 104 118 119 12 123 134 135 137 2 24 3 34 51 57 61 65 71 76 93 97
  20:  1 118 119 12 123 125 134 135 137 2 24 3 32 34 38 51 61 65 71 76 93
  21:  1 104 118 119 12 123 125 134 135 137 2 24 3 34 51 61 65 71 76 93
  22:  1 12 123 124 134 135 14 2 24 3 32 34 51 57 61 72 76 8 93 97
  23:  1 123 124 134 135 14 2 24 3 32 43 45 51 57 61 76 88 93 97
  24:  1 123 124 134 135 14 2 24 3 32 43 45 49 51 57 76 88 93 97
  25:  1 119 123 124 134 135 14 24 3 32 51 57 6 61 76 8 90 93 97
  26:  1 108 119 123 124 134 135 14 24 3 32 51 57 6 76 8 90 93 97
  27:  1 123 124 134 135 137 14 2 24 3 32 34 38 51 57 61 65 76 93 94 97
  28:  1 108 116 118 119 12 122 123 134 135 137 14 19 20 24 25 3 32 39 49 6 65 68 70 71 73 76 93 98
  29:  1 101 107 118 119 12 134 135 137 14 2 24 3 32 49 51 57 64 65 76 88 93 97
  30:  1 101 104 107 118 119 12 134 135 137 2 24 3 49 51 57 64 65 76 88 93 97
  31:  1 107 118 12 134 135 137 2 24 27 3 32 49 51 65 76 93
  32:  1 104 107 118 12 134 135 137 2 24 27 3 49 51 65 76 93
  33:  1 101 107 118 119 12 134 135 137 14 2 24 3 32 51 57 61 64 65 76 88 93 97
  34:  1 101 104 107 118 119 12 134 135 137 2 24 3 51 57 61 64 65 76 88 93 97
  35:  1 101 107 118 119 12 134 135 14 2 24 3 32 49 51 57 64 76 8 93 97
  36:  1 107 118 12 134 135 2 24 27 3 32 49 51 76 8 93
  37:  1 101 107 118 119 12 134 135 14 2 24 3 32 51 57 61 64 76 8 93 97
  38:  1 108 118 119 12 122 134 135 137 14 19 24 25 3 49 53 6 65 70 76 93 98
  39:  1 108 118 119 12 122 134 135 137 14 24 25 3 49 51 53 6 65 76 93 98
  40:  1 108 116 119 122 134 135 14 19 20 24 25 3 32 39 49 6 65 68 70 73 76 78 93 98
  41:  1 108 116 119 122 134 135 14 20 24 25 3 32 39 49 51 6 65 68 73 76 78 93 98
  42:  1 108 116 119 122 134 135 14 20 24 25 3 32 34 39 49 51 65 68 73 76 78 93 98
```

Appendix 5.2.3*G2*

Sample of actor-by-actor HIERARCHICAL CLUSTERING OF OVERLAP MATRIX
(Collaboration Network)

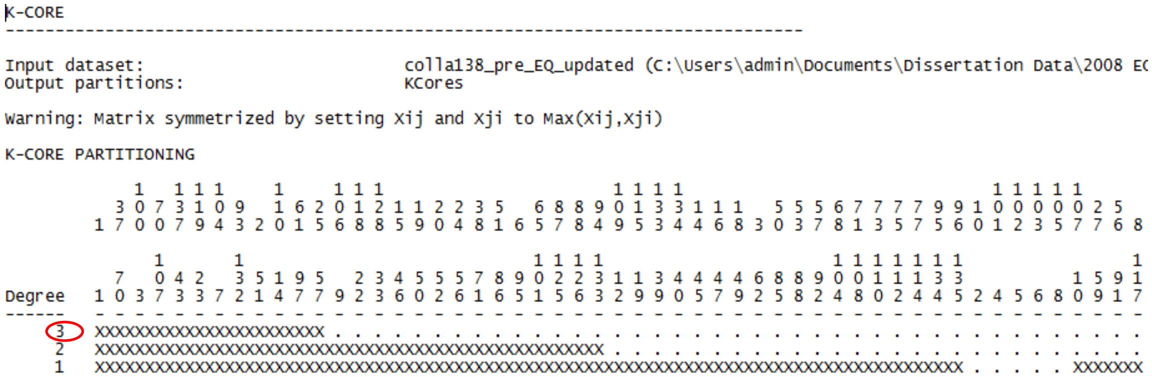
Recovery



Appendix 5.2.3*H1*

Sample of K-core Partitioning (Collaboration Network)

Pre-earthquake

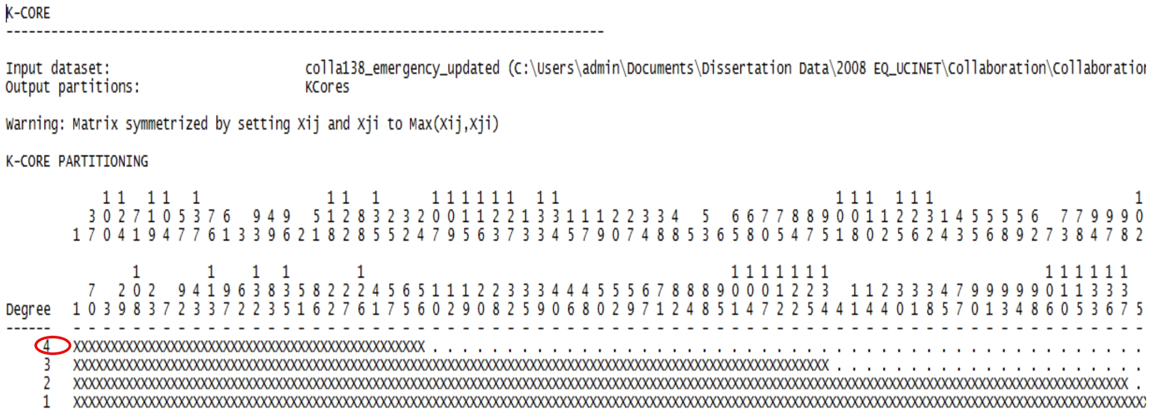


```
K-CORE
--------------------------------------------------------------------------------

Input dataset:                          colla138_pre_EQ_updated (C:\Users\admin\Documents\Dissertation Data\2008 E
Output partitions:                      KCores

Warning: Matrix symmetrized by setting Xij and Xji to Max(Xij,Xji)

K-CORE PARTITIONING

             1   1 1 1     1     1 1 1                       1 1 1 1                               1 1 1 1 1
           3 0 7 3 1 0 9   1 6 2 0 1 2 1 1 2 2 3 5   6 8 8 9 0 1 3 3 1 1 1   5 5 5 6 7 7 7 7 9 9 1 0 0 0 0 0 2 5
         1 7 0 0 7 9 4 3 2 0 1 5 6 8 8 5 9 0 4 8 1 6 5 7 8 4 9 5 3 4 4 6 8 3 0 3 7 8 1 3 5 7 5 6 0 1 2 3 5 7 7 6 8

               1       1                             1 1 1 1                       1 1 1 1 1 1 1                 1
           7   0 4 2   3 5 1 9 5   2 3 4 5 5 5 7 8 9 0 2 2 3 1 1 3 4 4 4 4 6 8 8 9 0 0 1 1 1 3 3           1 5 9 1
Degree   1 0 3 7 3 3 7 2 1 4 7 7 9 2 3 6 0 2 6 1 6 5 1 5 6 3 2 9 9 0 5 7 9 2 5 8 2 4 8 0 2 4 4 5 2 4 5 6 8 0 9 1 7
------   - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
     3   XXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     2   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
     1   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . XXXXXXX
```

Appendix 5.2.3*H2*

Sample of K-core Partitioning (Collaboration Network)

Emergency Response



```
K-CORE
--------------------------------------------------------------------------------

Input dataset:                          colla138_emergency_updated (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Collaboration\Collaboratio
Output partitions:                      KCores

Warning: Matrix symmetrized by setting Xij and Xji to Max(Xij,Xji)

K-CORE PARTITIONING

             1 1   1 1   1                 1 1   1       1 1 1 1 1 1   1 1                                     1 1 1   1 1 1                           1
           3 0 2 7 1 0 5 3 7 6   9 4 9   5 1 2 8 3 2 3 2 0 0 1 1 2 2 1 3 3 1 1 1 2 2 3 3 4   5   6 6 7 7 8 8 9 0 0 1 1 2 2 3 1 4 5 5 5 5 6   7 7 9 9 9 0
         1 7 0 4 1 9 4 7 7 6 1 3 3 9 6 2 1 8 2 8 5 5 2 4 7 9 5 6 3 7 3 3 4 5 7 9 0 7 4 8 8 5 3 6 5 8 0 5 4 7 5 1 8 0 2 5 6 2 4 3 5 6 8 9 2 7 3 8 4 7 8 2

                 1         1     1   1         1                                                 1 1 1 1 1 1 1                             1 1 1 1 1 1
           7   2 0 2   9 4 1 9 6 3 8 3 5 8 2 2 2 4 5 6 5 1 1 1 2 2 3 3 3 4 4 4 5 5 5 6 7 8 8 8 9 0 0 0 1 2 2 3   1 1 2 3 3 3 4 7 9 9 9 9 9 0 1 1 3 3 3
Degree   1 0 3 9 8 3 7 2 3 3 7 2 2 3 5 1 6 2 7 6 1 7 5 6 0 2 9 0 8 2 5 9 0 6 8 0 2 9 7 1 2 4 8 5 1 4 7 2 2 5 4 4 1 4 4 0 1 8 5 7 0 1 3 4 8 6 0 5 3 6 7 5
------   - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
     4   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     3   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . . . . . . . . . . . . . .
     2   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
     1   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

Appendix 5.2.3*H3*

Sample of K-core Partitioning (Collaboration Network)

Recovery

```
K-CORE
--------------------------------------------------------------------------------

Input dataset:                  colla138_recovery_updated (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Coll
Output partitions:              KCores

Warning: Matrix symmetrized by setting Xij and Xji to Max(Xij,Xji)

K-CORE PARTITIONING

                1 1 1   1  1 1    1             1 1 1 1 1 1                 1 1 1 1 1 1 1
  3 1 9 1 3 3 3 3 7 2 2 6 4 1 1 5 9  2  2 3 0 0 0 0 1 2 1 2 3 3 5  6 7  8 9 0 0 1 1 2 3 3 4  5 6 6 6 7 7 7 7 8 9 1
1 7 4 3 8 4 5 4 7 6 2 3 1 9 9 2 1 7 2 5 3 4 2 0 4 7 8 6 5 9 7 8 9 7 6 5 0 8 8 8 1 9 0 5 4 3 8 3 5 3 2 4 8 1 2 5 8 7 6 0

    1         1           1                             1 1 1 1 1                 1 1 1 1 1 1 1 1
  7 4 3 2 4 4 6 4 1 2 2 9 8 2 2 8 3 5 5 6 5 6   1 1 2 3 5 5 7 7 9 9 0 0 1 2 3  1 1 1 2 3 4 7 8 8 9 0 0 0 0 1 1 2 3
Degree  1 0 5 2 2 0 1 7 3 3 7 8 7 3 3 4 6 6 1 7 2 6 5 3 7 0 1 0 0 0 9 1 2 2 5 1 7 7 6 7 4 2 4 9 9 9 4 7 4 8 8 0 4 8 9 2 5 5 5 2
------  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
    5   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    4   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . . . .
    3   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
    2   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXO
    1   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXO
```

Appendix 5.2.3.01

NGO51-01-08
其实在512之前，它只是一个志愿者的一个团体，它只是个人行为的一个志愿团体，它不是一个真正的社会组织，所以它开展的活动完全都是以志愿者的形式去开展的。那么在512 之后，它跟我们聊得时候，因为大家都在参与这一块，它就发现我们在做这方面的推动，他就希望通过我们帮助他们把他们这个机构形成一个组织，做成一个专业化的社会组织，那么这样的话呢我们就发现在灾后呢他这个团体也比较有发展前景马，比如说他对自身的规划和项目要求也有比较清晰的认识。只是他在组建社会组织路径这一块它不是很熟悉。就是说通过什么样的流程才能把它做成一个专业化的组织。那做成专业化的组织之后我又应该怎样操作我的项目，可能在这些方面它不时很熟悉，所以我们会给他们提供这方面的一些支持.

Appendix 5.2.CaseNGO51.4

(1)
卢：为什么和一些机构之前有沟通才有合作，但是和爱有戏就是之前没有沟通就开始有合作了呢？
张：是这样的，成都这边有一个很特别的现象，就是在 512 之前四川这边有很多机构还没有成立这样的组织，或者不是一个正式民非组织， 很多都是以志愿者的形式去参与的。像爱有戏也是很明显的，它现在也是我们的孵化机构，。
这样的话，它就找到我们，申请了我们成都这边的第三期孵化，经过评选他也进来了，这样的话我们对我们孵化的机构也会提供一些平台性的支持，比如说会把它们引入到我们的社区服务平台里面去，比如说现在他就可以参与到我们这 16 个中心点的一些阶段性的合作。

(2)
那么我们这个合作就是分成两种形式来引入社会组织，一种呢就是长期的人员合作，跟他合作呢就是他必须派专人在这个项目负责。他这个项目要一直深入下去， 他的方案至少是要一年，至少有一个全职人员在这个点上开展活动。
还有一种就是阶段性的合作，
卢：跟他相似的还有马？在这个表上好像没有了巴。。
张：是这样的，因为我们在震前我们经常接触那些已经成型的，或者至少起码看上去它已经是一个是一个社会组织的机构， 才会跟它去交流。

(3)

卢：“起创”在灾区和你们也有项目是吗？
张： 是这样子的，广东起创在我们来到灾区之前，它们已经在灾区开展项目了。这样的话，我们在选点的时候，我们也会看一看他们做的好不好，有没有什么经验我们可以借鉴，这样的话我们就会找到他们做一种合作伙伴的形式。
卢：跟他们还是属于长期的马？
张：跟这种的话，我们基本上属于合作伙伴。看如果有效的话我们才会开展长期的。因为我们的精力和人力还是有限的，我们的视角不一定是涵盖的那么全面，可能有的机构作的比较好，已经在灾区作了一年多了的，像这些做得比较好的机构，我们就会邀请他们来一起分享，分享他们一年来的一些经验，他在这个领域中实践中可以借鉴的一些经验。我们会邀请他来给我们的其他的社会组织分享。就是说它是我们整个能力建设框架里的一部分。
（都江堰的这几个是不是属于政府的社工协会之类的呢？“华循”是，这个为什么我们之前有交流，就是因为我们在选择都江堰这个点的时候，都江堰我们有个点，它是一个大型的点。
卢：那现在你们跟他们的合作性质是什么样子的呢？就是项目开展，）

(4)
卢：你们和四川海惠小母牛是什么样的合作呢？
张：我们现在和他们合作的项目是叫“农村经济合作组织”的建设，就是合作社，就是农村合作组织的建设， 我们现在搞这个。我们和他们和作主要是因为在灾区除了一些社区重建之外，还有很重要的一块就是经济的恢复重建，就是要促进当地的经济的发展。
小母牛做得事情更多的就是从种植和养殖这方面入手来推动当地农村的经济发展，那我们做合作社的目的就是想通过合作社的发展去带动农民的增收。合作社在农村是普遍存在的，而且国家也在力推着一块，就是希望通过合作社能够带动农民共同致富吗。所以我们也是想通过这个项目去培养和建设一些好的合作社。

Appendix 5.2.3.02

NGO51-01-09
就是说针对社区的一些需求，当地可能没有社会组织来提供这样的服务，那我们必须引入其他地区的社会组织来提供服务，但是这些社会组织有不可能提供这么多的人力，因为他们都是属于初创阶段，人员都很少，不能提供全职人员到一个点上去。比如说成都的，它不可能派全职人员到北川去搞全职工作。所以我们只能以阶段性的合作来引入，所以说在项目设计方面可能就是说是 2-3 个月这样一个短期的，我们可以提供这样一个需求就是让它设计一个方案，针对 2-3 个月来满足社区需求的

方案来操作。这样的话就是说他配合当地的社会组织一起来开展这个项目。 所以它就属于阶段性的社会组织 。像在我们孵化器壳里的机构，我们也希望能够给他们提供一些机会，让他们去尝试去到那个社区去开展一些项目，这样对他的机构的运作和项目操作都有实践的机会，能够成长的更快一些。所以说这就是为什么我们在之前都没有交流和合作。

Appendix 5.2.3.03

NGO51-01-10

比如说有些我们引进的当地的小型的社会组织，有些时候我们的精力可能顾及不到的话，可能会邀请当地的类似"广东起创"做得比较好的一些社会组织来给我们做些督导和培训。反正我们最终的目标是把整个当地的社区服务组织建立起来。那这样的话，我们就要联合各方面的资源，除了政府的，可能还有我们同行的已经在当地作了的，比如说他们可能比我们做得早，像做了一年了，那么它肯定当地的一些经验和积累的东西都可以分享，这样的话我们就邀请它分享经验给我们引进的当地的社会组织，给他们做一些培训。 在当地应该怎样去开展会好一些。...就是说它是我们整个能力建设框架里的一部分。(NGO51-01)

Appendix 5.2.3.04

NGO51-01-11

We have a program location in Dujiangyan, it's a big one. When we were making selections on the program locations, we will often investigate whether there are practicing social service groups/organizations around the area. We would hope that once the program is set, we would need to introduce the appropriate groups/organizations to provide the services. So we usually will communicate with them beforehand and get an idea of their level of development at the time.

都江堰我们有个点，它是一个大型的点。我们在选点的时候我们会去看周边有没有一些相应的社会组织，我们就希望我们这个点确定下来之后，我们要引进周围的社会组织来提供服务吗，所以前期也会和它有些沟通，我们前期就会跟他聊，这样子的话我们就要去聊解当地的社会组织他们的发展程度是什么样子的。

Appendix 5.2.3.05

NGO51-01-12
我们跟他们的合作就是，他们（小母牛）在那边就好像我们的专家顾问团一样的，实际的项目开展是我们在作，包括我们实际的项目开展和培训，那么培训的人员就是他们。因为他们在农村做得特别久了，很有经验，他们就属于我们专家库里面的人员，所以我们每一期的参访阿和培训之类的我们都会去咨询他们，就是让他们提一些要求和意见，通过跟他们的合作我们再去设计我们的整个培训课程和参访的路线，所以主导在我们这里，他（小母牛）是我们的一个合作方，也就是我们的一个专家库这样子。

Appendix 5.2.CaseNGO51.4

(1)
卢：为什么和一些机构之前有沟通才有合作，但是和爱有戏就是之前没有沟通就开始有合作了呢？
张：是这样的，成都这边有一个很特别的现象，就是在 512 之前四川这边有很多机构还没有成立这样的组织，或者不是一个正式民非组织， 很多都是以志愿者的形式去参与的。像爱有戏也是很明显的，它现在也是我们的孵化机构，。
这样的话，它就找到我们，申请了我们成都这边的第三期孵化，经过评选他也进来了，这样的话我们对我们孵化的机构也会提供一些平台性的支持，比如说会把它们引入到我们的社区服务平台里面去，比如说现在他就可以参与到我们这 16 个中心点的一些阶段性的合作。

(2)
那么我们这个合作就是分成两种形式来引入社会组织，一种呢就是长期的人员合作，跟他合作呢就是他必须派专人在这个项目负责。他这个项目要一直深入下去， 他的方案至少是要一年，至少有一个全职人员在这个点上开展活动。
还有一种就是阶段性的合作，
卢：跟他相似的还有马？在这个表上好像没有了巴。。
张：是这样的，因为我们在震前我们经常接触那些已经成型的，或者至少起码看上去它已经是一个是一个社会组织的机构， 才会跟它去交流。

(3)
卢：“起创”在灾区和你们也有项目是吗？

张： 是这样子的，广东起创在我们来到灾区之前，它们已经在灾区开展项目了。这样的话，我们在选点的时候，我们也会看一看他们做的好不好，有没有什么经验我们可以借鉴，这样的话我们就会找到他们做一种合作伙伴的形式。
卢：跟他们还是属于长期的马？
张：跟这种的话，我们基本上属于合作伙伴。看如果有效的话我们才会开展长期的。因为我们的精力和人力还是有限的，我们的视角不一定是涵盖的那么全面，可能有的机构作的比较好，已经在灾区作了一年多了的，像这些做得比较好的机构，我们就会邀请他们来一起分享，分享他们一年来的一些经验，他在这个领域中实践中可以借鉴的一些经验。我们会邀请他来给我们的其他的社会组织分享。就是说它是我们整个能力建设框架里的一部分。
（都江堰的这几个是不是属于政府的社工协会之类的呢？“华循”是，这个为什么我们之前有交流，就是因为我们在选择都江堰这个点的时候，都江堰我们有个点，它是一个大型的点。
卢：那现在你们跟他们的合作性质是什么样子的呢？就是项目开展，）

(4)
卢：你们和四川海惠小母牛是什么样的合作呢？
张：我们现在和他们合作的项目是叫“农村经济合作组织”的建设，就是合作社，就是农村合作组织的建设， 我们现在搞这个。我们和他们和作主要是因为在灾区除了一些社区重建之外，还有很重要的一块就是经济的恢复重建，就是要促进当地的经济的发展。
小母牛做得事情更多的就是从种植和养殖这方面入手来推动当地农村的经济发展，那我们做合作社的目的就是想通过合作社的发展去带动农民的增收。合作社在农村是普遍存在的，而且国家也在力推着一块，就是希望通过合作社能够带动农民共同致富吗。所以我们也是想通过这个项目去培养和建设一些好的合作社。

Appendix 5.2.3.06

NGO49-01-06
其实我们 NGO 擅长做的不是基础建设，我们只是做一些软性的服务，社区服务这一块。所以说我们的重建主要是从社区服务这一块去切入。以专业社工为背景的社服， 而不是基础建设。基础建设是政府在搞这个东西.

Appendix 5.2.CaseNGO49.4

卢：你们的这个NGO 是一什么样的方式来运营的呢？
张：每年就用小项目招标的方式去引进一些专业的服务机构进来做事情，其实这样的话是满足几方的需求了，一个是我们所在的社区本身有这种需求，令外一个是很多 NGO 的服务机构他们又没有钱，但是又想做一些事情，那么就正好把这个需求对接上。其实我们作的是一个 NGO 的支持平台，一个资源平台，能够把外部的资源集中在这个平台上，再分到我们的灾区，然后来进行社区的重建。
卢：那您的那些物资之类的来源是什么呢？
张：因为我们是有一百多家机构在做这个事情，他们自己都有自己的网络，募集以后都是通过空运或者铁路运输运到成都。运到我们的物资转运仓库。然后其他的主要是通过募款，因为我在负责筹款这一部分

Appendix 5.2.3.07

NGO49-01-03

卢：你们之间互相不认识的话，之间 的信任度是怎么建立起来的呢？(LU-NGO49-01)
张： 我觉得这个其实是一个使命和价值观的问题。有相同的使命，其实在短时间内我觉得不存在磨合的问题，因为在那个时候很短暂，大概有一个月吧，大家有一个非常强的使命感，所以我想这个非常重要的，所谓志同道合嘛。

Appendix 5.2.3.08

NGO49-01-04
我们 每年都支持了七八个这种小机构。因为钱很少马，只有一百万，所以能支持七八个这种机构来做一些社区服务。那么这两年支持下来还是比较成功的。很多原来是一个人的小机构现在发展的很壮大了，比我们当年的发展的速度还要凶猛。所以很好，我觉得这样的一种支持是比较有意思的。

Appendix 5.2.CaseNGO49.2

卢：后来重组之后的机构结构和原来的最早的紧急救援阶段的结构有什么不同呢？

张：那是完全不一样的，那个（紧急阶段）是一个联合体，一个临时的机构，一个联合体。备灾中心是一个常设机构，它肯定是不一样的，它的治理结构肯定是跟我们一般的 NGO 都是一样的。

Current Recovery activities

卢：您都江堰那边的项目是什么呢？

因为我们比较倾向于作三个东西，第一个就是社会企业，另外一个是社区公共空间，另外一格就是NGO的支持平台。社区公共空间我们主要是在绵竹和什邡，震后我们在这两个地方做了两个比较大的社区中心，里面的服务功能比较强大，可以服务老人阿，小孩阿，里面还有一些创业培训，小额贷款的支持，都是以公共空间来实现的这个功能。另外一个主要是我们作的社会企业创投那块，支持当地的比较有特色的手工，让他们去做一些手工品，不仅限于这个，这只是其中一个例子。这个项目在绵竹，什邡，都江堰都在做。另外一个就是做ngo的支持平台，我们每年拿了一百万出来给那些弱小的草根，包括个人都可以申请一些小项目，我们作这个支持。主要就做这三个事情。

Appendix 5.2.CaseNGO24.2

HL(NGO24-01)对非政府组织发展的感言：

对于草根机构来讲，怎样平衡各方面的利益诉求很重要的 （政府，群众）。在地震后，首先紧要的是硬件住房上的重建，这方面主要有政府主导的。而 ngo 则善于软件方面的重建，跟适合于长期的援助行为。对于政府来讲（从硬件重建的完成来讲），灾后重建已经结束。但是对于 NGO 来说并没有，也许刚刚开始，可是我们面临的资源却几近枯竭，像资金来源和人力。就从社区发展方面来说，这方面还有长期的需要并可以持续。

Appendix 5.2.3.09

SG97-01-06

如果要想中国的 NGO 长远的做下去的话，政府还是很重要的。因为你的配合度，包括你搞活动的政治结构性这个是不可避免的，像你做活动没有政府的同意你是不能做得了的，这个是前提条件。那么同样它（政府）的力量协作型也是很强的，你也是要客观承认，只是说它的方法套路跟我们不一样，但是它的影响他的效能确实是很巨大的。

Appendix 5.2.CaseSG97.2

SG97：那像我们这样特别注重真实的长远性的东西的话，其实这个是满重要的。以长期性的发展来讲这个是很重要的。特别是那些长期发展性的项目，不是那种紧急救灾的项目的话，你不可能老是依靠外部的资金或者国外的资金，因为天灾人祸每年都那么多，人家也是救急而不是救永远的那种，要改变的话还是要靠自己内部的力量去做，包括申请资金也是，像那些国外的资金是，大灾初期的时候很容易申请，但是这个是临时性的，因为这个事发生了，人家也不可能一直跟下去。但是人家虽然明白这个是需要的，一个人的一辈子的生活的调整是很漫长的，但是每年都这么多的灾害，它不可能一直都支持你啊，还他还有更多的重心。所以这个紧急阶段之后更多的还是内在的去要自己去找，还是要靠自己的力量和自己的人，然后你才可能长期的蹲下去去做。因为就像原来我们有些外部的资金和专家那些，他们也不可能老在你这里啊，他也是一个阶段性的帮你支持一下，过完这个阶段我该干嘛还是干嘛去，还有那么多的点我还要做专家支持。你真正能够成下来作的还是要靠自己的人。

Appendix VI. Chapter 6 Appendices

Appendix 6.1

Homophily

(ANOVA Density Models in UCINET)

The concept of "homophily" refers to the phenomenon that actors with similar traits or characteristics are more likely to form ties with each other. In the context of this study, a simple homophily model would hypothesize that civil society actors with similar attributes are more likely to build a communication or collaboration tie together. Two types of actor attributes are being investigated in this research. One is the institutional formality represented by **registration status** and the other is the **geographic location proximity** in actors' practicing field offices in Sichuan Province. In this section I will focus on testing the hypothesis regarding homophily in terms of actors' registration status. As was emphasized in this research study, a registered civil society actor is categorized as a formal organization, while a non-registered one is defined as an informal social group. After the 2008 Wenchuan earthquake, we observed that there was a surge in the number of newly formed voluntary groups participating during the emergency response period. Operating as non-registered informal groups, some of these emerging groups were able to quickly become active and "centrally" embedded inside communication and collaboration network construction. Along with the increasing cohesiveness of relational activities inside the two structures immediately after the earthquake, it became important to investigate the driving factors behind this kind of dramatic structural integration after the crisis. One question to ask is that if such a process is characterized by homophily in registration status. Theoretically, it would be informative to know if the structural transformations of the communication and collaboration networks from before to after the earthquake actually showed signs of originating from actors building ties and intentionally associating with other of similar institutional formality traits. The results of this part of the study will also inform and facilitate the model specification process in testing network dynamics over time which will be conducted in the later sections.

Therefore, I would want to test the following **hypothesis**:

H1: If two actors are of similar registration status, it is more likely that there will be communication/collaboration ties between them.

Recall that there are three time periods being examined in this study and the homophily test will be looking at each individual time period by itself. The drawback of this modeling tool is that the results can only be generalized within the particular time frame being investigated. The model is not designed to examine networks development from a dynamic perspective to take into account of the continuous time factor and is weak in depicting the rules governing such dynamics. However, as stated earlier, conducting this analysis will provide some general guidelines when conducting the rather complicated model selection process using the Stochastic Actor-Based Models for network dynamics, which will be carried on in the next chapter.

I used the ANOVA Density Modeling tool implemented in the UCINET for testing whether the patterns of within and between group ties differ across groups. Tables below show the density measures of how often actors in group 1 reach out to those in group 2. In this study, "1" is coded as registered actors and "2" is coded as non-registered actors. Then, we can see that for the pre-earthquake communication network, members of the non-registered group have the highest tendency towards those in registered group. In other words, informal groups have a high probability to have communication ties and sharing information with formal nonprofit organizations. The second table provides information on the statistical significance of this model and the results showed that the model is significant at the $p<0.05$ (0.0356) level. Also, the next highest density measure is within non-registered group members. Therefore, we can say that during the period before the earthquake, there are relatively stronger evidences showing cross-group communication connection preferences while the non-registered actors showed some weak tendencies towards within group information sharing and communication.

Overall, for the pre-earthquake period, there does not seem to be strong signs of homophily according to actor registration status. For the period shortly after the earthquake, we can see from tables 5.19 (a,b) that there remains a slightly higher probability for non-registered actors to make connection towards registered members. However, the statistical test showed that the model did not turn out to be significant at the 0.05 level. This means that there are no signs of homophily across the institutionally different actors in communication tie formation. The similar pattern is followed by the results from the long term recovery stage. The model was not significant at the 0.05 level and we can therefore conclude that after the earthquake, there were no signs of tendencies for actors to associate with each other based on their registration status when forming communication ties. Such is an encouraging finding when discovering the emerging qualities of information sharing among civil society actors after the crisis in the Chinese context. First of all, from previous analysis, we know that the communication network

was activated to become increasingly densely connected and integrated soon after the earthquake. Secondly, the results from this section of analysis showed that such cohesion-building process is less likely to be originated from homophily tendencies based on actor registration status. This implies that actors are not likely to engage in "clique like" groupings simply based on their awareness of each other's institutional formality. Especially since the event of the disaster, we can conclude that the decisions for civil society actors to build communication ties are not as likely to be related to each other's registration status. This suggests that the network cohesiveness and interconnectedness might demonstrate a genuine sense of interests in building communication ties among civil society actors.

Looking through the density measures and the significance levels for the collaboration networks, one finds that none of the three homophily models fit the data well nor are they significant to demonstrate the existence of homophily based on registration status. Here we can say that the awareness of institutional similarity does not make a collaboration connection more likely. These results revealed that there are other factors, possibly structural ones that are responsible for the particular ways of development for communication and collaboration networks over time. In the upcoming network modeling section, I will further look into depicting the possible structural rules that govern these dynamics.

Communication Network (Registration status Homophily Test_t1)

Table 6.1*A*. Density Table (t1)

	1	2
1	0.009	0.008
2	0.027	0.016

Table 6.1*B*. Model Fit (t1)

R-square	Adj R-Sqr	Probability	# of Obs
0.004	0.004	0.0356	18906

Registration status Homophily Test_t2

Table 6.1*C*. Density Table (t2)

	1	2
1	0.052	0.045
2	0.075	0.041

Table 6.1*D*. Model Fit (t2)

R-square	Adj R-Sqr	Probability	# of Obs
0.002	0.002	0.4456	18906

Registration status Homophily Test_t3

Table 6.1*E*. Density Table (t3)

	1	2
1	0.059	0.053
2	0.092	0.050

Model Fit_t3

Table 6.1*F*. Model Fit (t3)

R-square	Adj R-Sqr	Probability	# of Obs
0.003	0.003	0.3006	18906

Collaboration Network (Registration status Homophily Test_t1)

Table 6.1*G*. Density Table (t1)

	1	2
1	0.003	0.003
2	0.008	0.005

Table 6.1*H*. Model Fit (t1)

R-square	Adj R-Sqr	Probability	# of Obs
0.001	0.001	0.2110	18906

Table 6.1*I*. Density Table (t2)

	1	2
1	0.013	0.008
2	0.017	0.010

Table 6.1*J*. Model Fit (t2)

R-square	Adj R-Sqr	Probability	# of Obs
0.001	0.001	0.4178	18906

Table 6.1*K*. Density Table (t3)

	1	2
1	0.015	0.013
2	0.025	0.017

Table 6.1*L*. Model Fit (t3)

R-square	Adj R-Sqr	Probability	# of Obs
0.001	0.001	0.3694	18906

Appendix 6.2*A*

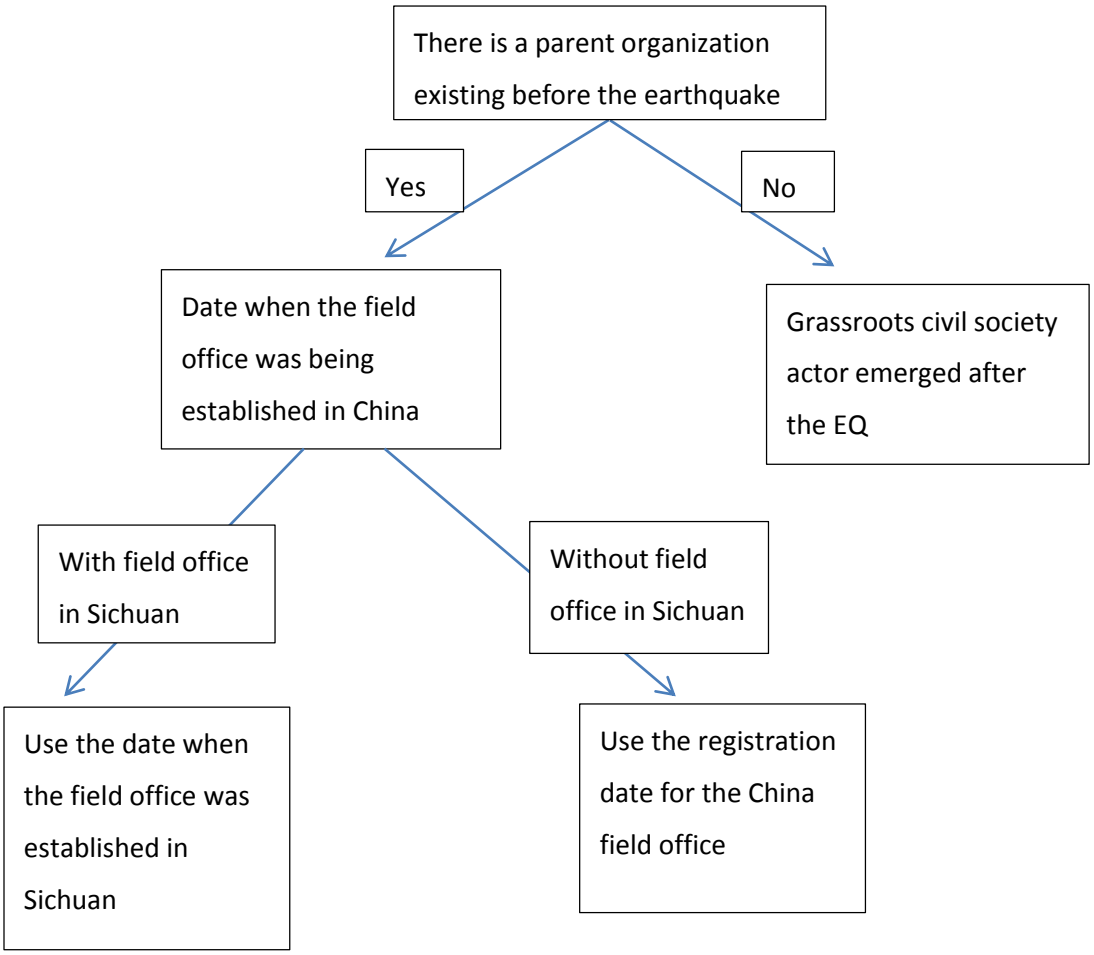
As a factor of caution, there is another network modeling technique called the exponential random graph models ('ERGM') that could seemingly be applicable to this study. It is one type of cross-sectional statistical modeling approach to examine network structure. However, there is an implicit equilibrium assumption in the ERGM analysis and it can best be understood as "a model of a process in equilibrium" (Snijder et al., 2010, p35). For the SAB longitudinal modeling, on the other hand, it takes into account the possibility of "out-of-equilibrium social systems" (p35) whose development over time could be subject to structural network tendencies. It postulates that just because the descriptive network measures did not show discernible trends through different points of time, it does not mean that the structural development is stationary. The longitudinal models thus incorporate the changes in social systems into the model-building techniques and allow for an alternative view of "equilibrium" states. This state is understood as a "dynamic equilibrium", where "changes continue but may be regarded as stochastic fluctuations without a systematic trend" (p35). In other words, ERGM is a "tie-based" model as compared to SAB models that are "actor-based" (Snijders et al., 2010). In the context of this study, the factor of social change is not located as a background picture but is taken to the forefront of the research methodology. The dynamic equilibrium perspective thus allows me to take change into consideration while developing models that especially reveal the dynamic nature of social phenomenon. Thus, the SAB modeling assumptions are particularly in line with the general theoretical framework of the emergence of "agency freedom" within which I have attempted to answer my research questions.

Appendix 6.2*B*

Among these 70 actors, 8 actors were actually non-responsive to the original survey, which means that they don't have any out-going ties in the network. Taking into consideration of the fact they all have high number of in-coming ties as reflected in the core category, their existence, from the perspective of other civil society actors, acts as key sources of information both before and after the earthquake. Deleting them will severely impair the way information exchange connections are structured in the network, especially from the perspective of those who initiated the ties. Therefore, I coded each adjacency matrix in such a way to reflect as much original network information as possible. In SIENA, missing entries are represented by specific codes. The rows of each adjacency matrix represent the initiation of ties to seek information from the corresponding individual actor. The columns represent the receiving end of the ties or the sources of the information. For each one of the non-respondent mentioned above, I coded their outgoing ties with SIENA missing codes (as "9"s) and kept their incoming ties in accordance with the original data.

Appendix 6.3

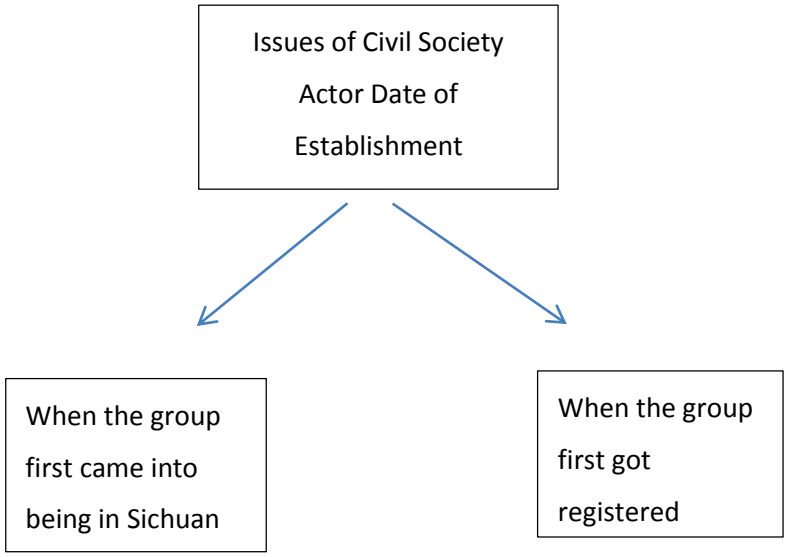
Decision Steps in coding for Composition Change (Part I)



Appendix 6.3

Decision Steps in coding for Composition Change

(Part II)



Appendix 6.4

Mathematical Representation of Within-network Structural Effects[245]

1) Out-degree effect, controlling the density/average degree (*density*),

$$s_{i1}(x) = x_{i+} = \sum_j x_{ij}$$

2) Reciprocity effect, number of reciprocated ties (*recip*),

$$s_{i2}(x) = \sum_j x_{ij} x_{ji}$$

3) Transitive triplet effect: i more attracted to j if there are more indirect ties $i \to h \to j$ (*transTrip*);

$$\sum_{j,h} x_{ij}\, x_{ih} x_{jh}$$

4) Transitive ties effect: i more attracted to j if there is at least one such indirect connection (*transTies*);

$$\sum_j x_{ij}\, \max_h (x_{ih} x_{hj})$$

5) Betweenness count (*between*),

$$\sum_{j,h} x_{hi}\, x_{ij} (1 - x_{hj})$$

6) Number of three-cycles (*cycle3*),

$$\sum_{j,h} x_{ij}\, x_{jh} x_{hi}$$

7) Indirect ties=number of geodesic distance equal to 2 (*nbrDist2*),

---

[245] More representations can refer to Snijders, van de Bunt, and Steglich (2010).

$$\#\left\{ j \middle| x_{ij=} 0, \max_h (x_{ih} x_{hj}) \succ 0 \right\}$$

8) Balance effect: i prefers others j who make same choices as j (*balance*),

9) In-degree related popularity effect (*inPopSqrt*):

$$\sum_J x_{ij} \sqrt{x_{+j}}$$

10) Out-degree related popularity effect (*outPopSqrt*):

$$\sum_j x_{ij} \sqrt{x_{j+}}$$

11) Out-degree activity (*outActSqrt*):

$$x_{i+}^{1.5}$$

Appendix 6.5

Dyad Counts for Communication Network (70 actors)

Table 6.5*A*. Dyad Counts:

Observation	total	mutual	Asymm.	Null
1.	1711	19	83	1609
2.	1711	87	309	1315
3.	1711	113	337	1261

Dyad Counts for Collaboration Network (70 actors)

Table 6.5*B*. Dyad Counts:

Observation	total	mutual	Asymm.	Null
1.	3422	8	50	3364
2.	3422	38	132	3252
3.	3422	54	180	3188

Appendix 6.6*A*

Sample of Core/Periphery Structure (Communication)

Pre-earthquake

Core/Periphery Class Memberships:

1: 1 100 104 106 108 110 115 118 119 134 137 14 19 20 24 25 27 37 38 50 51 57 6 61 65 70 88 93 94 95
2: 10 101 102 103 105 107 109 11 111 112 113 114 116 117 12 120 121 122 123 124 125 126 127 128 129 13 130 131 132 133 135 136 138 15 16 17 18 2 21 22 23 26 28 29 3 30 31 32 33 34 35 36 39 4 40 41 42 43 44 45 46 47 48 49 5 52 53 54

Blocked Adjacency Matrix

	1	71	3	107	22	40	7	59	9	52	11	132	133	14	101	85	86	95	19	97	45	56	23	92	50	70	43	57	126	134	10	13	21	34	27	20	12
	1	38	100	70	118	134	104	27	106	20	108	93	94	110	65	50	51	6	115	61	14	24	119	57	19	37	137	25	88	95	107	11	117	129	122	116	109	1
1 1																																					
71 38																																					
3 100	1.000	1.000					1.000	1.000	1.000				1.000	1.000	1.000							1.000	1.000			1.000		1.000										
107 70				1.000	1.000											1.000					1.000		1.000		1.000		1.000		1.000								
22 118																																					
40 134															1.000																						
7 104	1.000		1.000											1.000																						
59 27																																					
9 106			1.000			1.000						1.000			1.000																						
52 20															1.000	1.000			1.000					1.000		1.000											1.000
11 108							1.000								1.000	1.000					1.000					1.000										1.000	
132 93		1.000		1.000							1.000	1.000			1.000				1.000						1.000											
133 94																																					
14 110																																					
101 65	1.000	1.000		1.000	1.000						1.000	1.000															1.000										
85 50																																					
86 51	1.000	1.000		1.000	1.000	1.000		1.000		1.000			1.000	1.000						1.000	1.000	1.000	1.000	1.000		1.000	1.000	1.000	1.000								1.000
95 6	1.000	1.000	1.000		1.000		1.000						1.000		1.000				1.000		1.000	1.000		1.000	1.000		1.000		1.000		1.000						
19 115	1.000					1.000	1.000								1.000	1.000					1.000																1.000
97 61		1.000	1.000		1.000		1.000		1.000		1.000	1.000	1.000		1.000	1.000						1.000			1.000								1.000				
45 14																																					
56 24	1.000																				1.000																
23 119			1.000	1.000			1.000	1.000				1.000			1.000	1.000				1.000		1.000			1.000	1.000		1.000		1.000							
92 57	1.000				1.000	1.000																	1.000														
50 19				1.000	1.000				1.000												1.000								1.000								
70 37																																					
43 137	1.000		1.000		1.000				1.000			1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000			1.000		1.000								1.000		
57 25																																					
126 88	1.000															1.000																					
134 95																																					

	10	13	21	34	27	20	12
	107	11	117	129	122	116	109	1
10 107	1.000				1.000							1.000																									
13 11																																					
21 117																																					
34 129																																					
27 122																																					
20 116										1.000																											
12 109																																					
4 101																																					
5 102																																					
15 111																																					
8 105																																					
42 136																																					
35 13																																					
44 138																																					
37 131																																					
46 15																																					
47 16																																					
48 17																																					
49 18																																					
33 128			1.000						1.000														1.000														
51 2																																					
18 114																																					
53 21																																					
54 22																																					
55 23																																					
39 133																																					
6 103																																					
41 135																																					
25 120																																					
60 28																																					
61 29																																					
62 3																																					

Appendix 6.6*B*

Sample of Core/Periphery Structure (Communication)

Emergency Response

```
SIMPLE CORE/PERIPHERY MODEL
-------------------------------------------------------------------------------

Input dataset:                  NGO info communication_emergency_post_earthquake_138 (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 actors\txt\NGO info communication_emergency_post_earthquake_138)
Type of data:                   Positive
Fitness measure:                CORR
Density of core-to-periphery ties:
Number of iterations:           50
Population size:                100
Output partition:               CorePartition (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 actors\csv\ucinet output\CorePartition)
Output clusters:                CoreClasses (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 actors\csv\ucinet output\CoreClasses)

Starting fitness: 0.500
Final fitness: 0.545

Core/Periphery Class Memberships:

   1:  1 100 107 109 118 119 123 134 135 137 2 24 27 3 32 34 37 4 49 50 51 57 6 61 7 74 93 96
   2:  10 101 102 103 104 105 106 108 11 110 111 112 113 114 115 116 117 12 120 121 122 124 125 126 127 128 129 13 130 131 132 133 136 138 14 15 16 17 18 19 20 21 22 23 25 26 28 29 30 31 33 35 36 38 39 40 41 42 43 44 45 46 47 48 5 52 53

Blocked Adjacency Matrix

          1   70    3   73   22   40   41  111   43   10   28   12  132   83  135   85   86   95   23  106   59   56   65   92   67   51   62   97    19   13   27   15   21   18   35    2   20
          1   37  100    4  118  134  135   74  137  107  123  109   93   49   96   50   51    6  119    7   27   24   32   57   34    2    3   61   115   11  122  111  117  114   13   10  116  1
 ---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  1   1 |
 70  37 |          1.000          1.000          1.000                 1.000     1.000 1.000     1.000 1.000      1.000          1.000 1.000      1.000 |                                                                                                                  1.0
  3 100 | 1.000 1.000                                                                                 1.000      1.000 1.000                1.000 |
 73   4 |                  1.000                        1.000 1.000      1.000          1.000          1.000      1.000      1.000 1.000 1.000 1.000 | 1.000 1.000                                                                                  1.000      1.0
 22 118 | 1.000                                                                                                                                1.000 |
 40 134 |          1.000      1.000      1.000      1.000          1.000      1.000      1.000 1.000              1.000          1.000          1.000 1.000 |          1.000
 41 135 | 1.000 1.000 1.000      1.000 1.000 1.000      1.000      1.000 1.000      1.000          1.000                    1.000 1.000 1.000 1.000 1.000 |          1.000 1.000      1.000 1.000           1.0
111  74 |                  1.000                                                1.000                    1.000                1.000 1.000                                                                  1.000
 43 137 | 1.000 1.000 1.000      1.000                                          1.000      1.000 1.000      1.000 1.000 1.000 1.000          1.000 1.000 1.000 |          1.000                                                1.000 1.0
 10 107 | 1.000          1.000 1.000                      1.000 1.000 1.000 1.000      1.000 1.000 1.000          1.000                1.000 1.000      1.000 | 1.000                                                                                        1.0
 28 123 | 1.000 1.000      1.000                                      1.000      1.000          1.000                         1.000      1.000      1.000 1.000 |                1.000      1.000 1.000           1.0
 12 109 | 1.000          1.000                                      1.000      1.000 1.000                1.000 1.000          1.000      1.000 |                                                                                              1.0
132  93 | 1.000 1.000          1.000          1.000          1.000 1.000 1.000 1.000      1.000 1.000      1.000                    1.000 1.000 | 1.000          1.000                                                1.000
 83  49 |
135  96 | 1.000                1.000          1.000                      1.000                                         1.000                1.000 1.000 |                                                                                                  1.0
 85  50 |
 86  51 | 1.000                1.000 1.000 1.000 1.000 1.000      1.000 1.000      1.000 1.000 1.000          1.000      1.000 1.000      1.000 1.000 1.000 1.000 1.000 | 1.000                     1.000                1.0
 95   6 | 1.000 1.000 1.000      1.000 1.000 1.000 1.000 1.000 1.000      1.000      1.000      1.000 1.000      1.000 1.000 1.000 1.000 1.000          1.000 1.000 1.000 |                                                                                              1.0
 23 119 |      1.000 1.000                                                                      1.000 1.000                1.000 1.000 |          1.000
106   7 |      1.000      1.000      1.000          1.000                      1.000      1.000 1.000                1.000                1.000 |    1.000                                                                                     1.000
 59  27 |
 56  24 | 1.000 1.000 1.000      1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000      1.000 1.000 1.000 1.000 1.000 1.000 | 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.0
 65  32 |          1.000          1.000                      1.000 1.000 1.000 1.000 1.000 1.000      1.000      1.000 1.000 1.000 1.000 1.000 | 1.000                                                                                                            1.0
 92  57 | 1.000          1.000      1.000 1.000                1.000 1.000      1.000          1.000                1.000                1.000 1.000 1.000 |          1.000                1.000
 67  34          1.000      1.000          1.000 1.000 1.000      1.000      1.000 1.000 1.000          1.000                    1.000                1.000 | 1.000      1.000 1.000 1.000 1.000 1.000           1.000 1.0
 51   2 |
 62   3 |      1.000 1.000      1.000 1.000      1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000      1.000 1.000      1.000 |      1.000 1.000 1.000      1.000 1.000 1.000      1.0
 97  61 | 1.000 1.000 1.000 1.000 1.000                      1.000      1.000 1.000      1.000 1.000 1.000 1.000      1.000 1.000      1.000 1.000 1.000 1.000 |          1.000
 ---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 19 115 | 1.000                                          1.000      1.000      1.000 1.000                                         1.000      1.000 |
 13  11 |
 27 122 |
 15 111 |
 21 117 |
 18 114 |
 35  13 |
  2  10 |
 20 116 |                                                                    1.000                                                                |
 30 125 |
  5 102 |                                                                               1.000                1.000 1.000                1.000 |
  6 103 |
  7 104 | 1.000      1.000                                                                                                                     1.000 1.000 |
  8 105 |
  9 106 |                                                                          1.000 1.000      1.000                                1.000 |
 44 138 |
 11 108 |                                                     1.000                1.000      1.000 1.000                1.000 1.000                1.000 |                                                                                              1.000 1.0
 38 132 | 1.000                1.000 1.000          1.000                                                     1.000      1.000                1.000 1.000 | 1.000                     1.000                1.0
 47  16 |
```

Appendix 6.6*C*

Sample of Core/Periphery Structure (Communication)

Recovery

```
SIMPLE CORE/PERIPHERY MODEL
-------------------------------------------------------------------------------

Input dataset:                  NGO info commu_recovery_138 (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 actors\txt\NGO info commu_recovery_138)
Type of data:                   Positive
Fitness measure:                CORR
Density of core-to-periphery ties:
Number of iterations:           50
Population size:                100
Output partition:               CorePartition (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 actors\csv\ucinet output\CorePartition)
Output clusters:                CoreClasses (C:\Users\admin\Documents\Dissertation Data\2008 EQ_UCINET\Commu\Updated_138 actors\csv\ucinet output\CoreClasses)

Starting fitness: 0.511
Final fitness: 0.535

Core/Periphery Class Memberships:

   1:  1 100 107 109 111 118 119 12 123 134 135 137 19 24 27 3 32 37 49 51 57 6 61 62 64 7 74 76 85 93 97
   2:  10 101 102 103 104 105 106 108 11 110 112 113 114 115 116 117 120 121 122 124 125 126 127 128 129 13 130 131 132 133 136 138 14 15 16 17 18 2 20 21 22 23 25 26 28 29 30 31 33 34 35 36 38 39 4 40 41 42 43 44 45 46 47 48 5 50 52 53

Blocked Adjacency Matrix

          1   70    3   12   22   40   41  111   43   10   28  123   98   83   15   50   86   95  113   62  106   56   23   24   59  132  100   65  136   97   92    18    4   34   19    2   13
          1   37  100  109  118  134  135   74  137  107  123   85   62   49  111   19   51    6   76    3    7   24  119   12   27   93   64   32   97   61   57   114  101  129  115   10   11   1
 ---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
  1   1 |
 70  37 |       1.000                      1.000                                     1.000          1.000         1.000                                1.000                                                                                                                1.0
  3 100 | 1.000 1.000                                                                                                                                 1.000 1.000      1.000                                                                                                                1.0
 12 109 | 1.000                                                          1.000 1.000 1.000      1.000 1.000          1.000      1.000          1.000                                                                                                                1.0
 22 118 | 1.000                                                                                                     1.000
 40 134 |                                                                          1.000                            1.000      1.000      1.000 1.000 1.000               1.000
 41 135 | 1.000 1.000      1.000 1.000 1.000 1.000      1.000      1.000      1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000      1.000 1.000 1.000               1.000 1.000 | 1.000      1.000 1.000      1.000 1.0
111  74 |                      1.000                                                 1.000      1.000      1.000      1.000          1.000                                                                                                                1.000
 43 137 | 1.000 1.000               1.000                                                                                1.000 1.000      1.000 1.000      1.000                                                                                                                1.0
 10 107 | 1.000 1.000          1.000                      1.000                                1.000 1.000          1.000                1.000 1.000      1.000                                                                                                                1.000
 28 123 | 1.000 1.000      1.000                                                 1.000      1.000 1.000      1.000                1.000      1.000                          1.000 | 1.000                                                                                                                1.0
123  85 | 1.000            1.000          1.000      1.000      1.000      1.000 1.000          1.000                                                                1.000
 98  62 | 1.000            1.000          1.000                 1.000 1.000      1.000          1.000          1.000                      1.000                                                                                                                | 1.000
 83  49 |
 15 111 | 1.000                      1.000                      1.000          1.000          1.000          1.000                1.000
 50  19 |                 1.000 1.000 1.000                           1.000 1.000 1.000                     1.000      1.000 1.000      1.000                          1.000                                                                                                | 1.000
 86  51 | 1.000            1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000      1.000      1.000          1.000 1.000      1.000 1.000      1.000          1.000 1.000 1.000 1.000 | 1.000      1.000 1.000           1.0
 95   6 | 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000      1.000 1.000 1.000 1.000      1.000 1.000 1.000 1.000 1.000      1.000          1.000      1.000 1.000
113  76 | 1.000 1.000 1.000      1.000 1.000      1.000          1.000          1.000          1.000 1.000                                1.000      1.000      1.000      1.000 1.000                                                                                1.0
 62   3 |      1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000      1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 | 1.000 1.000 1.000 1.000 1.000 1.000 1.0
106   7 |      1.000                      1.000                      1.000          1.000 1.000      1.000      1.000 1.000 1.000                                                                                                                1.000
 56  24 | 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000          1.000          1.000      1.000 1.000      1.000          1.000 1.000 1.000          1.000      1.000                | 1.000      1.000           1.0
 23 119 |      1.000 1.000                                                                1.000 1.000          1.000      1.000          1.000                1.000
 24  12 | 1.000 1.000          1.000 1.000 1.000          1.000          1.000          1.000          1.000 1.000 1.000                     1.000 1.000      1.000                                                                                                1.000 1.000
 59  27 |
132  93 | 1.000 1.000      1.000 1.000 1.000 1.000 1.000 1.000      1.000          1.000      1.000 1.000      1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000      1.000                | 1.000 1.000           1.0
100  64 | 1.000 1.000          1.000 1.000      1.000 1.000          1.000      1.000          1.000      1.000 1.000 1.000 1.000      1.000 1.000 1.000                                                | 1.000      1.000 1.000 1.0
 65  32 |           1.000 1.000          1.000      1.000          1.000 1.000 1.000 1.000 1.000 1.000          1.000      1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 | 1.000 1.000                1.0
136  97 | 1.000 1.000          1.000 1.000 1.000      1.000      1.000          1.000          1.000 1.000 1.000 1.000 1.000      1.000 1.000 1.000      1.000                                | 1.000
 97  61 |      1.000          1.000                            1.000          1.000          1.000 1.000 1.000 1.000      1.000 1.000      1.000 1.000                     1.000
 92  57 | 1.000            1.000      1.000 1.000          1.000 1.000          1.000 1.000      1.000      1.000      1.000      1.000                1.000      1.000                | 1.000
 ---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
 18 114 |
  4 101 | 1.000                                     1.000                                1.000          1.000      1.000      1.000          1.000                                                                                                                1.000 1.000
 34 129 |
 19 115 |                 1.000                                                                     1.000          1.000
  2  10 |
 13  11 |
 30 125 |
 35  13 |                                                                                     1.000      1.000
 32 127 |
 21 117 |
  8 105 |
  9 106 |                                                                                          1.000                      1.000
 27 122 |
 11 108 |                                                 1.000                      1.000          1.000          1.000      1.000          1.000                                                                                                                1.0
 38 132 | 1.000                1.000 1.000          1.000                                                                     1.000          1.000      1.000                                | 1.000          1.000          1.0
  5 102 | 1.000
  6 103 |
```

Appendix 6.6*D1*

Sample of Ego-network Actor Brokerage Measures[246] (Communication)

Pre-earthquake

```
GOULD & FERNANDEZ BROKERAGE MEASURES
------------------------------------------------------------------------

Input dataset:                          NGO info commu_pre_earthquake_Rr
Partition vector:                       "C:\Users\admin\Documents\Disser
Method:                                 UNWEIGHTED
Normalized Brokerage:                   relativebrokerage (C:\Users\admi
Unnormalized Brokerage:                 brokerage (C:\Users\admin\Docume
Warning: Attribute vector has been recoded.

Here is a translation table:

  Old Code     New Code    Frequency
  ========     ========    =========
         1     =>     1           42
         2     =>     2           10
         3     =>     3           18

Number of classes: 3

Un-normalized Brokerage Scores

                1          2          3          4          5          6
          Coordinat Gatekeepe Represent Consultan   Liaison      Total
         ------------------------------------------------------------
  1   1 |         0          0          0          0          0          0 |
 37  34 |         0          0          0          0          0          0 |
 20 125 |         0          0          0          0          0          0 |
 39  38 |         0          0          0          0          0          0 |
 40   4 |         0          0          0          0          0          0 |
 41  40 |         0          0          0          0          0          0 |
  7 107 |         0          1          0          0          0          1 |
 43  48 |         0          0          0          0          0          0 |
  9 109 |         0          0          0          0          0          0 |
 45  50 |         0          0          0          0          0          0 |
 11 111 |         0          0          0          0          0          0 |
 12 114 |         0          0          0          0          0          0 |
 13 115 |         0          0          0          0          0          0 |
 14 116 |         1          0          1          0          0          2 |
 66  93 |         1          0          2          0          0          3 |
 33  25 |         0          0          0          0          0          0 |
 17  12 |         0          0          0          0          0          0 |
 18 123 |         0          0          0          0          0          0 |
 19 124 |         0          0          0          0          0          0 |
 54  68 |         0          0          0          0          0          0 |
 21 128 |         0          0          3          0          0          3 |
 22  13 |         0          0          0          0          0          0 |
 23 131 |         0          0          0          0          0          0 |
 24 132 |         0          0          0          0          0          0 |
 60  79 |         0          0          0          0          0          0 |
 26 135 |         0          0          0          0          0          0 |
 27 137 |        21         11         15          3          3         53 |

Legend: (given flow 1-->2-->3, where 2 is the broker)
      Coordinator:  A-->A-->A  (all nodes belong to same group)
       Gatekeeper:  B-->A-->A  (source belongs to different group)
   Representative:  A-->A-->B  (recipient belongs to different group)
       Consultant:  B-->A-->B  (broker belongs to different group)
          Liaison:  B-->A-->C  (all nodes belong to different groups)
```

[246] The brokerage measures from UCINET were analyzed based on 70 core actors in the communication network.

Appendix 6.6*D2*

Sample of Ego-network Actor Brokerage Measures (Communication)

Emergency Response

GOULD & FERNANDEZ BROKERAGE MEASURES

```
Input dataset:                          NGO info communication_emergency
Partition vector:                       "C:\Users\admin\Documents\Disser
Method:                                 UNWEIGHTED
Normalized Brokerage:                   relativebrokerage (C:\Users\admi
Unnormalized Brokerage:                 brokerage (C:\Users\admin\Docume
Warning: Attribute vector has been recoded.

Here is a translation table:

  Old Code     New Code    Frequency
  ========     ========    =========
      1     =>     1           42
      2     =>     2           10
      3     =>     3           18

Number of classes: 3

Un-normalized Brokerage Scores

                 1         2         3         4         5         6
           Coordinat Gatekeepe Represent Consultan   Liaison     Total
          ---------- ---------- ---------- ---------- ---------- ----------
  1   1 |          0          0          0          0          0          0 |
 37  34 |        105         64        104         34         18        325 |
 20 125 |          0          0          0          0          0          0 |
 39  38 |          0          0          0          0          0          0 |
 40   4 |         26         20         11          6          2         65 |
 41  40 |          0          0          0          0          0          0 |
  7 107 |          7         14          1          1          4         27 |
 43  48 |          4          2          2          0          0          8 |
  9 109 |         44         45         22         13          9        133 |
 45  50 |          0          0          0          0          0          0 |
 11 111 |          0          0          0          0          0          0 |
 12 114 |          0          0          0          0          0          0 |
 13 115 |          6          1          1          0          0          8 |
 14 116 |          0          0          0          0          0          0 |
 66  93 |          6         10          5          4          3         28 |
 33  25 |          0          0          0          0          0          0 |
 17  12 |          0          0          3          1          0          4 |
 18 123 |         23         35         15         13          4         90 |
 19 124 |          0          0          0          0          0          0 |
 54  68 |          0          0          1          0          0          1 |
 21 128 |          0          0          0          0          0          0 |
 22  13 |          0          0          2          1          0          3 |
 23 131 |          2          1          1          0          0          4 |
 24 132 |          4          0          2          0          0          6 |
 60  79 |          2          1          3          0          1          7 |
 26 135 |          0         40          0         17         12         69 |
 27 137 |         74         59         35         13         10        191 |

Legend: (given flow 1-->2-->3, where 2 is the broker)
      Coordinator:  A-->A-->A  (all nodes belong to same group)
       Gatekeeper:  B-->A-->A  (source belongs to different group)
   Representative:  A-->A-->B  (recipient belongs to different group)
       Consultant:  B-->A-->B  (broker belongs to different group)
          Liaison:  B-->A-->C  (all nodes belong to different groups)
```

Appendix 6.6*D3*

Sample of Ego-network Actor Brokerage Measures (Communication)

Recovery

GOULD & FERNANDEZ BROKERAGE MEASURES

```
Input dataset:                          NGO info commu_recovery_70 actor
Partition vector:                       "C:\Users\admin\Documents\Disser
Method:                                 UNWEIGHTED
Normalized Brokerage:                   relativebrokerage (C:\Users\admi
Unnormalized Brokerage:                 brokerage (C:\Users\admin\Docume
Warning: Attribute vector has been recoded.

Here is a translation table:

  Old Code     New Code    Frequency
  ========     ========    =========
      1     =>     1           42
      2     =>     2           10
      3     =>     3           18

Number of classes: 3

Un-normalized Brokerage Scores

                 1         2         3         4         5         6
           Coordinat Gatekeepe Represent Consultan   Liaison     Total
          ------------------------------------------------------------
  1   1 |         0         0         0         0         0         0 |
 37  34 |        15         5         3         0         1        24 |
 20 125 |         0         0         0         0         0         0 |
 39  38 |         0         0         0         0         0         0 |
 40   4 |         7         8         3         5         1        24 |
 41  40 |         0         0         0         0         0         0 |
  7 107 |         0        11         0         2         1        14 |
 43  48 |         0         0         0         0         0         0 |
  9 109 |        29        48        12        10         7       106 |
 45  50 |         0         0         0         0         0         0 |
 11 111 |        12        11         4         3         0        30 |
 12 114 |         0         0         0         0         0         0 |
 13 115 |         6         2         2         0         0        10 |
 14 116 |         0         0         0         0         0         0 |
 66  93 |        66        81        35        15        22       219 |
 33  25 |         0         0         0         0         0         0 |
 17  12 |        40        57        41        27        23       188 |
 18 123 |        41        47        24        10         7       129 |
 19 124 |         1        17         0         1         2        21 |
 54  68 |         0         0         0         0         0         0 |
 21 128 |         0         0         0         0         0         0 |
 22  13 |         0         1         0         0         0         1 |
 23 131 |         0         2         0         0         0         2 |
 24 132 |         0         2         0         0         0         2 |
 60  79 |         0         0         0         0         0         0 |
 26 135 |        37       112        22        33        26       230 |
 27 137 |        27        50        10        13        13       113 |

Legend: (given flow 1-->2-->3, where 2 is the broker)
      Coordinator:  A-->A-->A  (all nodes belong to same group)
       Gatekeeper:  B-->A-->A  (source belongs to different group)
   Representative:  A-->A-->B  (recipient belongs to different group)
       Consultant:  B-->A-->B  (broker belongs to different group)
          Liaison:  B-->A-->C  (all nodes belong to different groups)
```

Appendix 6.6.01

NGOLF-01-05

“但是反过来讲，民政局它也不愿意做我们的主管单位，那我们就属于无主管单位。就这样定义了”。(NGOLF-01)

Appendix 6.6.CaseNGOLF.3

卢：您是全国第一个马？

彭：在成都是，全国是不是我不知道，但是在深圳，广州，还有北京都还没有作这样的试点，我还没有注意到就是说在申办期间，跟民政局有沟通马，它就很确认就是说你们就是无主管单位。如果有主管单位的话也应该是民政局，不可能是教育局，因为我们做的这些事情都是属于社会工作的， 哪怕有培训和教育，那也是一种社会教育，不是说学校里面的教育。但是反过来讲，民政局它也不愿意做我们的主管单位，那我们就属于无主管单位。就这样定义了。

卢：当时你们原来就不想有主管单位吗？

彭：没有，当时我们想得更多是要把这个证拿到。因为如果没有这个证的话，第一，从各个角度来讲，不管是找谁去要钱，个人的行为都是不妥当的，它毕竟是一个单位马，它不是一个人说了算，他也有它的理事会阿，监事会阿，它就比较正规马。还有就是比如说你在成都联系学校的时候，你说我要给你们的学生作个活动阿，那还有一个单位的名字，这个就好相处很多了，去联系青少年宫啊，就是单位找你谈事情了，不是我个人找你谈了。这个单位是国家认可的，还有证，相对来说，最初就对你有一个起码的信任马，认识你的还好说，不认识你的就会更好一些吗。

卢：民政和工商注册有什么去别呢？

彭：民政注册就是给你一个身份就是你不是一个企业，但是工商注册就是一个企业，别人给你捐款你就得交税，你就有收入。非营利的捐款这一块应该是免费的（不交税的），很多注册 的是公司，出去签协议之类的始终叫人看到你就是一个公司，像“妈妈之家”，还有 512 孙政那个以前不是和做过卖花吗，然后去谈的时候那怎么变成一个公司了呢？盖的章都是公司的章，当你不熟悉的时候就觉得你是不是骗子阿，是不是想利用我们这帮人的热心来自己做生意阿。这些问题都是遇到的，但是后来时间长了，人家看到你做的事情确实是这样的，就还好了。但是始终会有人不了解你啊。但是如果你不是一个公司，如果一看你就是一个社会机构的话，他就首先这个顾虑就会打消很多。因为一般人想公司就是赚钱的马，从法律定义来说，民非和公司最大的区别就是民非它是不能营利的，有营利也不能分红的，而且民非里

面投进去的东西， 比如说你在民非帐上的东西，那怕你有个车或者是固定资产的，从法律上来说，这个固定资产都不是属于哪一个人的。如果说你要注销，法律规定你所有的资产都是要充公的马，简单来讲都要给公益事业。只能拿出来，不能拿回去。但是如果你的车是挂在这个名下了，那你就不要想拿回去了。公司有老板有股东的阿，公司解散了，那还是属于股东的阿。

Appendix 6.6.02

NGOLF-01-06

去联系青少年宫啊，就是单位找你谈事情了，不是我个人找你谈了。这个单位是国家认可的，还有证，相对来说，最初就对你有一个起码的信任马，认识你的还好说，不认识你的就会更好一些吗。(NGOLF-01)

Appendix 6.6.03

NGOLF-01-07

很多注册 的是公司，出去签协议之类的始终叫人看到你就是一个公司，(像“妈妈之家”，还有 512 孙政那个以前不是和做过卖花吗，然后去谈的时候那怎么变成一个公司了呢？)盖的章都是公司的章，当你不熟悉的时候就觉得你是不是骗子 阿，是不是想利用我们这帮人的热心来自己做生意阿。这些问题都是遇到的，但是后来时间长了，人家看到你做的事情确实是这样的，就还好了。但是始终会有人不了解你啊。但是如果你不是一个公司，如果一看你就是一个社会机构的话，他就首先这个顾虑就会打消很多。(NGOLF-01)

Appendix 6.6.04

NGOLF-01-10

本来我们就没有问题，但是我们不做报告就不明不白的，你也觉得我们不明不白的，我反而觉得你还不如叫我向你报告这个月我做了什么事情，下个月我做什么事情，然后我的钱是过来多少，花到哪里去了，好像有个报告反而还好一点，要是没有报

告， 反而是个担心，那天你（政府）说我怎么样了，我还真的说不清楚了呢。所以它现在没有这样的细则，

Appendix 6.6.05

SG3-03-06

因为你这个机构不是。。。比如说成都现在批准的ngo, 他是希望是能够到社区去提供服务的，那我们不是一个区直接提供服务的，我们只是给ngo提供服务。所以没有业务主管，谁管，民政不管，科协也不管，说你不是研究机构， 你有不是做科研的，又不是做技术的，所以它也不管。那红十字会它也觉得，红十字会是做救援，你这个是做信息，也不行。所以就没有主管单位，就这样。现在还在继续努力。成都市现在是有这个试点，就是公益机构可以无主管，但是我们去咨询了，但是虽然是无主管，它现在是试点，所以它现在批地就是弱势群体服务的，那我们不是直接提供服务的机构，我们也不是直接面对弱势群体，所以不行。因为我们自己的定位很清楚，我们是给n g o 提供服务的。 (SG3-03)

Appendix 6.6.CaseSG3.3

Special Topic

Registration Issue as Institutional Obstacle

("If you can maintain sufficient (financial) support for your program, and then can still function well, then, you can still safely work in the field. But it will be very difficult. Take us for example, we've already functioned for three years without legal registration status, but with a lot of difficulties. If we have some money in Beijing, we cannot receive it because our center does not have a bank account to properly accept it. We can't use my own personal account. Out center must have its own bank account. But we don't. Circumstances like this are very common among Chinese NGOs. Regardless, we all have survived. This is why have a saying: the Chinese government provided us NGOs a gray area, neither is it black nor white, neither will it treat you as a revolutionary group to be quickly replaced, nor will it give you proper legal status. So you are not 'pure', that is

why it is called a space of gray area. NGOs don't have to be registered in order to interact with foreign NGOs (before the 2008 earthquake, domestic funding were almost non-existent, foreign funding was the only choice). (SG3-02)

(如果你可以比较好的得到项目的支持，能够比较好的工作的话，你也可以安然无恙的一直做下去，只不过你是非常艰难的了，就我们现在不是做了 3 年了吗，我们也没有合法的身份，但是我们就很艰难，比如说我现在还有一笔钱在北京，但是我现在拿不到这笔钱，因为我（中心）没有一个银行帐户可以接收这笔钱。我的个人帐户它是不同意给我的，（中心）必须要有一个银行帐户，但是我们没有。像这种情况在中国的 NGO 组织里很普遍。 但是大家都可以生存下来，所以我们一般有一个描述就叫作：政府还是给了 NGO 组织一个灰色的空间，不白也不黑，不把你当成反革命组织马上来取缔你，同时呢也不给你合法的身份，你也不清白，所以叫灰色的空间。NGO 呢可以不注册，可以和外国之间打交道（在 2008 年地震之前基本上就没有国内的资金，和国外是唯一的选择）. (SG3-02)

"After 2008, a few funding agencies in China started to support domestic grassroots NGOs. They would publicize for not going for "foreign milk", but at the same time, they were still reluctant to take the money out. Or looking at the matter objectively, they eventually did not provide the money. As they would say: 'our funding is under-used, why? It's because there were no organizations that would qualify for our terms and conditions'. This is their way of understanding. On the other hand, the NGOs would continue function without sufficient financial support for their projects. Survival became a big issue. This is looking at the matter from a macro point of view. Even if they can't completely give off the funding, they would still provide a little bit. On our side, as the survival is at risk, funding from them aren't the only channel, there are still many incidences of foreign financial support. The majority of funding for us NGOs comes from foreign funding channels. It's only when after 2008 earthquake, it brought about significant changes and impact on the domestic funding agencies. These impacts include the fact that they started to truly support us, that was a very difficult beginning…they finally started to recognize supporting grassroots groups/organizations. (SG3-02)
从 2008 年以后，中国有少量的基金会开始支持国内的 NGO 组织，他们就在倡导说不要和"洋"奶，但是他们实际上也不愿意把钱拿出来，或者说从客观上来讲，最终没有把钱拿出来，他们自己就讲：我们的钱用不掉，为什么呢，就是因为没有附和条件的项目机构。这是他们的说法，但是 NGO 组织呢就是得不到钱的支持，得不到资金来支持项目。生存都有很大的问题。这个只能说是从大面上来看是这样，但是它既使花不出去呢它多少还是支持一点，这边虽然说是生存都有危险了，毕竟

他们那边不是唯一的渠道，现在还是境外支持的资金比较多。大家都还是主要用境外的资金。只不过呢从 2008 年地震以后， 的确对中国的基金会这块待来了比较大的变化和影响。所谓的比较大的影响是说他们开始支持了，那个开始很难啊，他们开始想到了支持草根组织。(SG3-02)

Appendix 6.6.06

NGO49-01-05
我觉得这个行业。。。应该是公信力吧，就是中国人经常讲的口碑，这个很重要，我们是 2005 年这个团队成立的，到现在大概五六年了，我们这个机构一直都没有自己的宣传责页之类的，连我们的网站都没有做。都基本上是外部的合作伙伴在主动找我们，我们很少去做推广和宣传。而且我们还是有选择的去接一些项目，不是说有钱我们都去拿。我们有自己的原则。所以我觉得这个公信力非常重要。

Appendix 6.6.CaseNGO24.3

NGO24-01：但是政府还有排斥（不重视）。其他的困难可以从以下几个方面理解：１）资金， ２）NGO 本身的能力问题（专业能力建设， 则需要足够的人力和资金资源），3）可是很多团队的志愿者都是很关注短期的紧急救援阶段而且赶到灾区，可是真正关心长期的灾后重建的很少（包括政府）。

Appendix 6.6.07

NGO51-01-06
这主要是他们自己的一个判断，比如说“爱有戏“，它觉得它自己就是一个志愿者（团队），他们的创始人之前也是一个全职的工作人员。他只是在业余的时间做一些志愿者的活动。但是他这个志愿者活动作的比较好，也可能是因为他自己工作的关系，他自己是在血液中心作，所以经常接触到一些志愿者，所以他就经常把这些志愿者经常组织在一起开展一些活动。所以他一直在他的理念中认为，他所有开展的活动都是志愿者的行为，它不是一个组织，他也没有想把它变成另外一个实体像民非组织这样子，他就不会全职投入到这里面来做。那么我们判断的一个标准就是它全职在做这个事情。这样的话你才能对这个事情付出全部的精力。

Appendix 6.6.08

NGO51-01-07

“This means that our criteria would still be requiring they are doing it full-time. Because the energy devoted into the work is very important. If you don’t even have at least one full-time person working for you at the start-up phase, this would result in the extremely slow progress in the development of the group/organization in the later stages. At the same time, if they wanted to transition into a full-time group/organization, there are difficulties too. This is why we provide some small amount of financial support for those start-ups who are willing to devote full-time into their work. We now call it “seed fund”. Through this part of the funding, it will provide the opportunities for these groups/organizations to have at least one full-time employee to work for them, for the duration of around one to two years. This way, even if the founder himself does not have the time to work on it full-time, he could at least be able to find a full time employee to do it.”

就是说我们的标准还是它们起码要是全职的。因为精力非常重要，你要是再初创期的时候连一个全职工作人员都没有的话，对整个项目的推进和机构的成长是非常慢的。 但是它们如果要是变成全职的话，也是比较困难的。所以说这就是为什么我们在提供全职入口孵化的时候，会提供一些小的资助。我们现在把它叫做 ”种子基金“， 通过这部分资金呢，让他有一个全职工作人员可以在这个机构里工作，最起码保证有一年到两年的时间，哪怕他的精力抽不出来，他也可以这找一个全职的工作人员来做。

Appendix 6.6.CaseNGOLF.4

卢：挂靠在共青团下面是个什么概念呢？

NGOLF-01：因为这边的志愿者服务都是规共青团领导的，可以这样讲，所以说武侯空间开始做的时候就是一个社区志愿服务的一个项目，这边做青年工作的肯定是共青团，不可能是别的地方，所以当时香港那边来做项目，这边就是以共青团成都市委的名义和社区这样合作。因为共青团和社区他们都是政府吗，相对来说也有一些政府的行为在里面。给了他们一些地啊，有招了一些人，给这个空间建立起来了。但是建立起来以后，就像他们自己讲的，只是把房子搭好了，到底青少年空间作什么他们后不知道，那它只有找社会各界的这些作公益的，志愿者的团队合作来做。所以最后我们就和他们有一些合作。也不光是我们，还有其他很多机构和他们合作。我们主要就是我刚才讲的这些课程，她们也和其他环保之类的组织和做，就是把那

些内容装到武侯空间那个地方去。也通过武侯空间她们去联络一些学校或者老师，因为他们（武侯）有官方的背景，所以他们在联系学校的时候就比我们有优势一些。

Appendix VII. Chapter 7 Appendices

Appendix 7.*1A*

CLUSTERING COEFFICIENT

Input dataset: NGO info commu_pre_earthquake_138

Overall graph clustering coefficient: 0.341
Weighted overall graph clustering coefficient: 0.129

Node Clustering Coefficients

	1	2
	Clus Coef	nPairs
1	1 0.164	55.000
2	10	0.000
3	100 0.114	153.000
4	101	0.000
5	102	0.000
6	103	0.000
7	104 0.267	15.000
8	105	0.000
9	106 0.381	21.000
10	107 0.071	21.000
11	108 0.125	36.000
12	109 0.500	3.000
13	11	0.000
14	110 0.400	10.000
15	111	0.000
16	112	0.000
17	113	0.000
18	114	0.000
19	115 0.033	153.000
20	116 0.333	3.000
21	117	0.000
22	118 0.232	28.000
23	119 0.188	136.000
24	12	0.000
25	120	0.000
26	121	0.000
27	122	0.000
28	123 0.000	1.000
29	124	0.000
30	125	0.000
31	126 0.500	1.000
32	127	0.000
33	128 0.500	6.000
34	129	0.000
35	13	0.000
36	130	0.000
37	131	0.000
38	132	0.000
39	133 0.000	1.000
40	134 0.208	36.000
41	135	0.000
42	136	0.000
43	137 0.102	171.000
44	138	0.000
45	14 0.550	10.000
46	15 0.833	3.000
47	16	0.000
48	17 0.500	1.000
49	18 1.000	1.000
50	19 0.233	45.000
51	2 0.300	10.000

Appendix 7.1*B*

CLUSTERING COEFFICIENT

Input dataset: NGO info com

Overall graph clustering coefficient: 0.455
Weighted Overall graph clustering coefficient: 0.139

Node Clustering Coefficients

		1 Clus Coef	2 nPairs
1	1	0.150	496.000
2	10	0.550	10.000
3	100	0.255	300.000
4	101	0.167	78.000
5	102	0.417	36.000
6	103	0.450	10.000
7	104	0.429	78.000
8	105	0.600	10.000
9	106	0.569	36.000
10	107	0.144	703.000
11	108	0.447	66.000
12	109	0.246	406.000
13	11	0.567	15.000
14	110	0.564	55.000
15	111	0.550	10.000
16	112	0.583	6.000
17	113	0.433	15.000
18	114	0.464	28.000
19	115	0.353	78.000
20	116	0.476	21.000
21	117	0.500	1.000
22	118	0.371	136.000
23	119	0.306	276.000
24	12	0.476	21.000
25	120	0.304	28.000
26	121	0.500	3.000
27	122	0.536	55.000
28	123	0.166	561.000
29	124	0.679	28.000
30	125	0.425	120.000
31	126	0.375	36.000
32	127	0.472	36.000
33	128	0.650	10.000
34	129	0.700	10.000
35	13	0.571	21.000
36	130	0.554	28.000
37	131	0.367	15.000
38	132	0.171	210.000
39	133	0.600	10.000
40	134	0.266	351.000
41	135	0.171	820.000
42	136	0.667	3.000
43	137	0.187	630.000
44	138	0.500	1.000
45	14	0.457	105.000
46	15	0.500	55.000
47	16		0.000
48	17	0.750	10.000
49	18	0.633	15.000
50	19	0.455	78.000
51	2	0.225	231.000

Appendix 7.1*C*

CLUSTERING COEFFICIENT

Input dataset: NGO info com

Overall graph clustering coefficient: 0.496
Weighted Overall graph clustering coefficient: 0.167

Node Clustering Coefficients

	1	2
	Clus Coef	nPairs
1	1	0.189	465.000
2	10	0.700	10.000
3	100	0.179	276.000
4	101	0.160	210.000
5	102	0.500	6.000
6	103	0.417	6.000
7	104	0.378	78.000
8	105	0.667	3.000
9	106	0.667	36.000
10	107	0.101	528.000
11	108	0.423	78.000
12	109	0.274	351.000
13	11	0.595	21.000
14	110	0.526	78.000
15	111	0.257	210.000
16	112	1.000	1.000
17	113	0.750	6.000
18	114	0.482	28.000
19	115	0.429	78.000
20	116	0.500	45.000
21	117	1.000	1.000
22	118	0.401	171.000
23	119	0.220	435.000
24	12	0.200	703.000
25	120	0.433	15.000
26	121	0.650	10.000
27	122	0.694	36.000
28	123	0.211	630.000
29	124	0.336	171.000
30	125	0.421	120.000
31	126	0.514	36.000
32	127	0.472	36.000
33	128	0.550	10.000
34	129	0.700	15.000
35	13	0.486	36.000
36	130	0.700	15.000
37	131	0.333	3.000
38	132	0.098	153.000
39	133	0.583	6.000
40	134	0.362	276.000
41	135	0.128	2080.000
42	136	0.850	10.000
43	137	0.291	406.000
44	138	0.536	28.000
45	14	0.485	136.000
46	15	0.750	28.000
47	16	0.667	3.000
48	17	0.500	36.000
49	18	0.477	66.000
50	19	0.225	595.000
51	2	0.260	171.000

Appendix 7.CaseNGO51.02

Additional field details for NGO51-02

HLJ(NGO51-02) 参观后看到村里的青少年，老年人，和妇女的各类活动室在刚刚进大门的时候都没有明确的标识以方便村民来参加活动， 所以就提议能不能摆一快牌子在大门口以做标识。但是志愿者说村上不会同意的：

卢：你们跟其他当地组织合作就比较专业是马？
何：对，他们知道怎么去评估怎么去组织活动，去了解这个过程中怎么去总结，去调整，这边的话这种工作做得比较弱一点。但是我觉得他们也是很积极的在座，这点我倒是很欣赏的。还是很理解他们面对的困难的。
比如说他们在做老年人的和志愿者的这些活动的话，他们在记录和梳理上是比较欠缺的。感觉没有深入下去，还是给一个周期把，在这个周期的5 到六月份的工作中，让他们尝试一下在这些方面能够去梳理这些方面工作的一些点，他们究竟改变了什么，比如说文化娱乐的方式已经有所改变了是把，那它提供了一种方案 ，这个方案是不是大家都满意了，没有满意的是什么原因，有没有去开发别的可能性。这些方面是需要他们来想的。
卢：最终的目标是什么呢？
何：这方面有一些不同看法的地方。（一方面认为）社工的理想的目标是社区的人完全可以在他们的社区的内部来解决所有的问题，包括我们刚才说的和社区外部的联络他们都可以建立起这样的人和人之间的关系是融洽的，如果面临冲突的话大家也知道应改怎么样解决，一起去面对社区未来的发展。这时社工就可以不存在了，社工不存在的时候，社区还运行良好的时候，它应该是个好的社区。 但是也有的观点认为就是说社区中心仍然可以去存在，只不过是说不停去发现比如说这个志愿者团队成长起来了，他能够去解决社区的各种各样的问题，那有些东西可以不停的去做因为（各个社区）需求推进的进度计划是不一样的，所以社区工作可以有不同工作去做。所以，我也不知道那一种好，是留在那里还是留在那里，那里是需要他们呢还是不需要他们。但是我们整体上都不暂同一个社区对社工的依赖，对外来的依赖。
卢：就是说从长期来看，还是让他们不是有那么大的依赖性还是比较好，是吗。

社区服务中心的计划去给到各家公司去谈，当时谈了很久很久很周折，谈了一年，当时我们谈的时候就说我们为什么要去社区中心，社区在灾后被打乱重组了以后呢人们的交往呢是需要有一定带动的。社区事务的解决是需要社区居民来参与的，那么这段路是期望我们把社区中心把它变成一个公共活动空间的方式去带动社区的这

种人际的交流。通过活动的方式带动他们的交流以后他们能够在这种活动的交流中曾进彼此的信任和关系，一起去发现怎么样去探讨问题，去建立起这样的意识和能力。那么通过这种方式的话我们就够带动社区力量最终能够良性去参与社区公共事务的管理和解决。那么第一步就是要实现这个社区中心它要成为整个社区的公共活动空间第一个就需要他有一个亲和力和凝聚力。那么亲和力从哪里来呢，我想社工是很重要的一点，一个是大家都特别喜欢你，就觉得你跟他们是在一起的，不是来逛一下就跑了的。第二点就是这个社区中心本身它传达个居民的（概念）是这里真的是我们可以到里面去的，我到那里去就可以得到服务，我是那里的像主任一样的，有人在那里给我提供服务，我也觉得我自己的能力有所增强，觉得在那里我解决我的某些需要，这就是在社区中心里面我们为什么要对社区里不同的人群去设立一些服务。老人这方面有哪些需要需要我们社工一开始就要去探访去摸索的。他们的需求又可能孤独的需求，又可能是关系上的不健康的需求，之类的，看看我们能够怎样去制定我们的服务计划去对应解决，这个计划也能够体现我们的一种思路，从上午我们看到的你们的工作计划里我决的你们在暑期的青少年的计划里面考虑的比较多的，这个属于我们的一个强项，在老年人活动这边有一些常规性的活动的开展，目前我觉得这一部分的工作是培育了一些妇女的舞蹈的骨干志愿者，她们已经初具了一点点社区活动里面带动社区有一些的团队，服务已经在进行了，是对社区关系的一种活络。那么接下来我们希望这个活动能往下去深入一下，就是说更加能够提升社工本身在这个社区中心里面专业的价值。那这一部分的话我觉得有一点是我们可以来分享的。就是在妇女活动的这块里面，你看到其实已经有一些骨干志愿者了，你提到说他们是有组织能力的，在社区内部她们自己可以去组织，但是在外部的资源连络上面可能还需要借助，还需要你们。我不知道会不会存在这样的冲突，就是说这个社区是需要你们，你们的参与可以使他们更加能够自立，他们又这样的能力和意识说你们来时帮助他们自己独立起来去解决社区的问题的，因为“助人自助”我们也在谈阿。就是说我们的工作整体上的方向是他们不再依赖我们，社区的需求是多层面的，是在这一块工作里，像舞蹈阿者方面，我们要逐渐减少他们对我们的依赖，他们自己越来越能够通过他们自己的组织联络资源调配就能够解决这部分的文化活动的话，那这部分的工作要做到这个层面上可能就需要给他们增加一点能力一点技能，就是能够使这一部分的工作能够靠他们自己的能力就能够去开展，那我们的社工在这个时候去做的功作的重心就可能需要有一些调整和转移，更过的活动的组织和策划和资源的联络这些方面是我们去协作，通过协作的关系把他们推到前面，甚至怎么在这个群体里面她们之间更加能够有这种能够去沟通去了解社区需求的这种意识，就让他们主动去工作，我们做为观察者和协助者。他们在讨论，在解决社区事务和调动社区资源的问题上他们面临什么样的困难是需要我们去参与的，更多的具体活动的组织，具体活动的策划的这些方面的话，我们现在有一个团队起来的话，我觉得我们可以考虑社工的专业往下面一点，就是为这一群的骨干去增加他们

的能力，我们是做为外围的观察者，这样把他们社区的人放到解决社区事务这个核心的位置上来，这是我自己的看法，因为看到你们组织的活动都挺有成效的，大多数时候我们工作的专业性就是再往下深一级，就做为这一群团队的一个支持者。就是说他们现在还欠缺一些技能，对外沟通的这种渠道阿，能力，　或者人际交往的一些技巧，这些方面是我们工作的点，那别的活动的具体组织，那些就是社区骨干他们可以完成的事情了。社工我们在这些问题上的工作量可以进行一下调整，我觉得这是一种尝试的方向。我们是希望这个社区由更多的自立自助的能力，更多的解决社区的需求和事务是依靠社区自己的人有一个参与的意识，去解决问题去协商这种能力和意识慢慢建立起来。那么在这方面的话，我们在五六月份会去探讨一下各种可能。你们提出一个发展的比较好的小组，那么在这个小组上尝试着社工角色的重新定位和你们的工作量。这是我们希望社工的专业可以往深里面去走，这是我们做这个项目的看法，这个社区中心最终是需要社区里自己的人管理。

何：不一定离开，也可以陪伴。因为在国外别人已经作了很多年，比如说和我们比较相近的台湾的经验，社区是需要社工的，不过他们不会去参与某些具体事务的比如说我们做一次活动的物料准备阿和计划之类的，她们就不会去参与这些了，更多的是把团队带起来以后，去观察他们的一些需要。那么活动组织策划社区里面的人自己是最容易做的，因为所有的事情都跟他们自己直接相关。 社工的角色就是一个观察者，在适当的时候是资源的笼络者。我们不是站在一线直接的。那些直接的服务是有一些个案的介入和小组的介入，这样一种比较深度的工作的话可以介入。但是对于社区活动的组织的话，社工通常不会站在一个最前沿的位置。因为我们就是要通过这些社区活动来让社区的这些不同的团队能够去展现他们自己。后来我们都需要他们自己的人来做这些事情。
善：明白你的意思了，就是说角色要换个位置。现在实际上 很多事情是我们在主导。还是亲历亲为。你比如说有些事情需要老师来，有一个什么演出的需要老师来排练，他们都会跟我们说，其实这些老师都来过很多次了，他们都很熟悉，但是他们（社区的人们）不会去找他（老师），还是要找我，或者找小傅，所以下一步我们可以尝试一下让他们来做，如果说沟通不到位的话，我们可以去协调。

Field Obstacles

何:其实这是一个给我们的社区服务对象曾能的一个过程，就是提高他们的能力的一个过程。肯定也不是直接甩给他让他们做，这个过程中有一些骨干的人如果他们觉得对这个事情感兴趣，觉得愿意来做这个事，看他愿不愿意来承担这样一个责任。就像一个小的队长一样，他来组织他们这个事情，把这个搞起来。 那么社工可以腾出时间来做更多别的事情。

善：农村社区还是有一些问题，农民的文化层次还是有一定的局限，我们曾经尝试过，我们的骨干确实有能力把整个社区的文化爱好者组织起来，能组织，而且他也去组织，但是他们会有很多牢骚，甚至于他们做了很多事情之后，就去找书记去了，说你给我开点工资把。你是不是应该给我开工资，因为我做了很多事情。但是村上的干部，比如说妇女主任阿文书啊，没有这个能力去做好这个事情，只有我们这两个志愿者他们能够做，但是做完之后他们又很多问题。
何：这就是社工要解决的问题。因为他们这个团队有这群骨干起来了，但是他们在做事的动机和意愿 上面，再我们看来一个社区的事务我们自己去解决，甘心乐意去做才是比较好的。如果他们没有这么去看的话，这些方面是需要我们去沟通的。我想以各真正的社区领袖和一个小组的领袖会认为社区的事是我自己的事。
志愿者：从社区骨干的层面上来说可能是牢骚会发，但是事情会做好。但是一方面他们也会受家庭的影响。比如说老伴阿，儿子阿，会比较反对。认为他们自己家里的事情都不管了，跑出去去做别的事。他们（社区志愿者）也是有很大的压力的。

何：这些都是社工工作很有价值地方。这个压力的话是需要他们自己来做平衡的。她能够参与多少。一个志愿者首先要在他基本的角色完成的基础上他能够去做这些活动，它也要首先处理好和家庭之间的和别的事务的关系。这个时候如果说他一股劲的铺在这方面的工作上却忽略了别的关系的话这本身就是问题了。有的时候不需要他做的太多，他能够做一部分，并不是一个人要做下所有的事情。应该是大家有一个一起去商量去计划有这么一个过程。在我们看来理想的状况没有必要随时要有很多的东西，看起来很热闹，热闹这只是一个层面的东西，就是说参与者活动的人是不是真的体验到了参与其中的快乐，这个过程中没有报怨，也愿意相互支持。我想社工里面有提过一句话，就是要曾强服务对象的社会参与的和社会支持的能力。也许就说他们以前参与可能是没有兴趣，或者说我压根就很讨厌，那么他们这种认识的和参与的障碍被打破了以后，愿意怎么来参与这个活动，那么就解决了。还有一个就是社区支持，比如说我看到社区里面有几个人能够借钱给我，如果大家不去帮忙还是各管各的话，那么社区就没有实现真正的人和人之间的这种支持的关系。那在这群舞蹈里面的人也是一样， 如果一群人就在那里跳一下舞，只是自己享受一下，跟别人没有关系的话，这也算是一种表面现象了。这也不是我们真正想看到的社区活动的面貌。它表面上看起来好像是很热闹，但是并没有促进人和人之间的关系的改良，没有促进我们共同去关注什么事务，那么这种活动就不会带来真正上的社区活动的改变。这种活动就算是一直做下去社区的人的改变还是不会很大。
所以说如果现在志愿者骨干开展的活动你觉得会有一些障碍的话，社工就可以和他们去沟通。在他们又意愿的基础上面把更多的工作去分享给他们。看他们的意愿吗，我们可以去尝试，社区是不应该依赖社工的，一些工作上面如果已经有团队了的话，社工的这种工作的角色就应该改变，你们关注的重点就不应该是活动开展的具体的

事物，而是带动这个事物的人和他本身和团队存在的一些问题，在这些方面去尝试一下去做一些工作，我觉得这是我们的一个期望。因为我们要看到一个社区里面社区的能力的成长是和社区里自己组织起来的这些志愿团队，就是自己服务自己的团队的成长是统一结合的。那么这些团队成长起来的一些状况就跟我们和社区中心的工作的一个成效是直接相关的。我们会看说是不是社区里面老人的团体出来了，有一群的老人家愿意主动到这个团队里来担当的更多，他也知道该怎么去做事，该怎么去组织，我们是在关键的地方给他们支持，给一些建议，给他们一些特别的资金的支持区辅助他们的活动的执行。然后比如说在妇女，青年的小组里面针对教育的，生计的阿，各自有这样的小组出来，各个小组自己有自己的活力，我们是这样认为我们应该是怎样去做社区服务的。如果沟通以后我们可以达到更好的共识的话，我们的工作和合作都会觉得更加的顺畅。

善：我们当时介入这个社区也是因为这个农村新型社区，集中化居住，有原来的农作的散居，到现在的集中化的居住。那么有一个适应性的问题，有一个对这个社区的认同和归属感的问题，基于在这个目标我们进入到这个社区里面来。我们就想通过这些一系列的活动把老人，妇女，把他们从家里面引出来，参与我们的这个活动，在参与的同时让他们又意识的来关心自己的社区。我们本身是有一点政府的味道，因为我们是民政局主管，那么我们很多工作要求我们就要配合基层政府，我们基层政府关心的是什么，他们想解决的是什么问题，那就是我们要去关心的问题，鹿池这个地方呢，原来地震过后，集中居住之后，它的模式在都江堰来说八个字：群设群里，群芳群治。自己的小区全部是由自己的人来管理。包括执勤，包括像这些老人，老太太，她们每天都要值班，晚上也是100多户人，能换得，24 小时马，因为这个小区是开放式的，所以必须要有这些执勤的。咱们成是社区里面还有物管，但是说如果我们这个小区如果说有物管的话就会变向的增加了生活成本。所以我们就是怎么样去能让老百姓引出家门，更多的去参与社区的管理。更多的去关心自己的家园。包括我们后来的爱心超市，这些都是基于这个考虑。

何：就是说也是需要调动社区里面的人来管理自己设区的事物。

善：参与，包括方方面面把，就是说大家在一起经常开展活动，大家在一起有时候就会遇到村里的事情，变相的大家就会参与到村上的公事中来了

Appendix 7.1.01

SG3-01-15

“In fact, almost three years since the earthquake, it seems that we have never directly dealt with government. But at the same time, we have never had any significant hurdles that would prevent us from functioning. That’s because we first positioned our functions

as complementing their tasks. The government did their part of works. And we were focusing on servicing NGOs. So there weren't many intersections between our tasks. Early on during the disaster response period, we would provide working briefs to the earthquake relief headquarter at that time. But over time, that headquarter was dis-integrated as well, and thus less direct contacts since then. There may be some personal connections initiated from within the Ministry of Civil Affairs or its related branch systems. For example, some working there would contact us but out of their own personal attention, and we would send them the information related to our works. Even then, substantive discussions or mutual impacts were still non-existence.
其实就从地震后快三年，我们好像没有直接和政府打过交道， 但是也没有碰到过不让你做任何事情的阻力，因为我们的定位也算是查缺补漏马，政府作的是那一套的东西，我们的服务对象也是民间组织，没有产生很多的交集，虽然说在早期的时候我们会有工作简报马，都回给当时的那个抗震救灾指挥部发送，到后来救灾指挥部也没了，直接的联系也蛮少的。可能个人方面有一些联系的话像民政部或者民政厅这个系统是由个别的老师有时他们会关注的话我们也会给他们发送我们的工作信息。但是很实际的讨论或者是影响还是没有。

Appendix 7.1.02

SG3-01-16
其实我觉得我们的工作，包括从一开始的时候，政府肯定都是知道的，不管是通过怎样的渠道或者什么样的方式。他们肯定都会知道你会做些什么。但是直接的，比方说我们是不是和政府有一些工作上的交往，相对来说是少的。我们也刻意的没有做这一块。我们之前也说过，我们的直接服务对象就是这些ｎｇｏ，另外一个就是说我们很清楚我们的定位，我们是政府工作的查缺补漏，另外的一个层面就是说，我们没有和直接和政府的很多部门发生关系。

Appendix 7.1.03

SG3-01-17
。。。我们就卡在了这个主管单位的环节上。你看我们现在的工作， 如果你跟现有的一些法规去核对的话，我们的直接服务对象是NGO组织，它既不是老人，残疾人，小孩，妇女，或者是你做环保，像这种固定的弱势群体，或者像我们以往概念

当中的NGO的工作领域。然后，就找不到主管单位，就是想找人管，没人愿意管你。这个就是一个很大的问题，包括我们之前曾经尝试去找红十字会，他们之前也是从来没有管过这个，没有主管过所谓民间组织这个概念，当时是我和郭老师去找的，他们也是为我们这个事情，特意去打了报告，看是不是行，但是到最后也是成了一个“悬案”。他（政府）也不给你结果，他也不给你说行，也不给你说不行，就是让你等着。后来我们也找到了社科院这边。他们这边就更好玩了，他们根本就没有这个概念，我们自己要帮他们起草一个民间组织管理办法。就是我们自己要把那个他们起草一个怎么管我们的东西。他们连这个东西都没有，更不要说之前的这个业务了。你要是问我和GH老师，这个问题应该怎么解决，我们一时也想不出办法来。

Appendix 7.1.04

SG3-02-04

所以我们的工作问题的确是非常德多。我们中国的公益领域阿因为刚刚才开始起步，国家的制度建设几乎是没有，就是无法可依，从一些运行机制来讲呢也都没有很好的建立。制度都没有怎么建立这个运行的机制阿。所以都没有。这样呢就造成了不规范。这个不是说哪一个机构的动作不规范，使全领域不规范。是在一个没有规范，不可评估的这么一种状态下，来发展这个事情。所以困难呢我跟你讲的是这一些，肯定还没讲完。你要是到另外一个地方他跟你讲的困难可能又是另外一些。就说明这个事情它没有规范，无章可循那，如果一个事情有章可循，它什么制度都是完备的，运行机制他也是完备的，运行时有效的，那么其他剩下的就很简单了，剩下的就是你该做的你就做，我该做的我就做，然后我就可以问责，什么都可以来。但是我们这什么都没有，所以说什么都谈不上。就是这么一种情况。

Appendix 7.1.CaseSG3.5

(1)

。。。按中国民间组织过去那种生存方式和资助方式，或者说习惯，像我们这样的组织地一个是过去没有，第二个是不被支持的。就是说我们工作所需要的经费是不被支持的。(SG3-02)

。。。所以实际上，工作的困难还是很多。但是大家就在这个困难的条件下，靠自己的能力，靠自己确实能够为社会提供服务自己的这种信心，靠自己的这种奉献，。。。(SG3-02)

Appendix 7.1.CaseNGO24.5

LU: 看到你们在表格里填写的震前与震后都和政府有沟通和合作，有哪些呢？企业也是。

Summary account of NGO24-01:
政府方面分为两个层次：1）省级，地方，市，县，镇。2）分部门：如林业，环境等。企业也分为大致两类：1）外企（如通用，丰田为代表的）。2）民营企业（如联想，阿里巴巴）

LU: 您最希望得到哪些政府部门哪方面的支持呢？非政府组织之间的合作呢？

NGO24-01:
林业厅，环保相关的，旅游相关的，很希望能有一些政府政策上的协调。我们很希望基金会方和 NGO 之间，NGO 和 NGO 之间能有互相的合作和对接，信息交流平台为同行间的合作提供帮助是很重要的。

Appendix 7.1.04.01

SG123-01-04
“我们 （非政府组织）相当于政府和群众之间的桥梁，能够起到缓解矛盾的作用…”

Appendix 7.1.CaseSG123.5

LU:企业支持的有哪些？

SG123-01:在2009-2011之间，有EMC, CISCO这样的公司来找过我们他们提供资金，由我们运行项目。项目至今都是有都江堰所有中小学的心理老师来参加的培训。

Appendix 7.1.CaseNGO51.5 (1)

(1)

卢：那么政府这方面，（从调研问卷上，您认为防灾最重要的因素是。。。）你们希望政府支持，如果具体一点，你们希望政府哪方面的支持比较好，或者那个部门的呢？

张：如果你从灾后重建来看，比如说象这16个点，政府的支持最直接看得到的就是这16个点的空间的提供。不光是地点，他还包括房子。或者是一幢楼，或者是一幢楼的一层或者几个房间。这个是政府免费提供的。这其实也是一个很大的支持。所以我们去跟政府谈的时候，至少这是他们最基本要提供给我们的。

卢：还有其他哪方面的支持呢？比如说政策方面有没有呢？

张：基本上我们去跟他（政府）谈的时候基本上影响不会那么的快。就是说它不可能一下子就满足到我们政策方面的（需求），

Appendix 7.1.05

NGO51-01-13

那我们最希望的一个政策上的支持就是在社会组织的注册上面。因为这方面目前对社会组织来说是比较困难的。我们到任何一个地方去跟政府谈的时候，我们都会跟他讲，在政策这方面会不会有一些条件的放松和优惠。他们可能会说这个可以考虑，但是你也知道这种考虑不是一下子就能看到结果的。所以我们只能慢慢去挖这样。

Appendix 7.1.06

NGO51-01-14

当时我们在上海做社区服务，他看到我们上海的那个模式非常好。 在上海我们主要是做社区平台的搭建。因为现在有很多的社区服务中心，很多都是由政府主导的，像类似居民委员会这样的组织在里面。 政府现在就是说会把这个厂地交给我们，来委托我们来管理，那么我们来管理的话，我们就会根据当地社区的需求来引进各种社会组织进来开展服务。...所以他(N)就说能不能通过这种方式在灾区也搭建这样一个社区服务平台，是这样子过来的。

Appendix 7.1.CaseNGO51.5 (2)

(2)

卢：企业（合作）方面您能不能给我举个例子呢？

张：这个16个社区中心所有的资金都是诺基亚支持的。跟我们和作的其他企业，还有像Intel跟我们也有合作。成都这边主要还是诺基亚。当时也是它（诺基亚）跟我们联系的。
我们最开始做是在上海这边，因为这边社会组织的发展相对来说还是比较好的，有很多。所以我们就会根据社区需求来筛选不同的社会组织进来做。我们就是相当于搭建了一个社区平台来找不同的社会组织来做，这样资源就活跃起来了，是这样一种模式。所以当时他（诺基亚）是看到我们在上海的这种模式比较好，比较吸引他，所以他就说能不能通过这种方式在灾区也搭建这样一个社区服务平台，是这样子过来的。

Appendix 7.1.07

SG97-01-11
所以你能够长期给的方向其实可能真的是政府方面，如果他（政府）能够有这样的理念给你长期的支持。当然这样的支持是有赖于政府本身的观念和它的工作的认同和支持度。

Appendix 7.1.CaseSG97.5(1)

(1)
SG97-01：就是说很多 NGO 要想长期生存，其实最现实的本地化就是如果有持续的稳定的资金支持，可以持续的作。因为很作项目我们最怕的就是短期效应。就是因为跟钱挂钩马，钱很多就是一年是吧，一年完了就完了，但是实际上特别是做人的事，想我们做着个健康板块，一年绝对只是一个开始，一般来做健康的最起码要做很多年，你才会看到变化和它长期稳定的支持， 一年只是一个破冰阶段而已。像基金会的概念现在就是短期效应，包括企业，因为这种不可能长期稳定的支持你，他们是根据企业的发展和自己的方向来决定的。

Appendix 7.1.08

SG97-01-12
它能够接纳你去做，这已经算是很好的一个方面了。它接纳你去做这个事已经算是一种认同了。因为他有可能说不让你来做，你又能怎么样呢？我可以不要你来做嘛。所以它能够让你来做，你就有机会去做这样的事情，这个也是挺好的。包括很多时候像我们做社区，政府给我们提供办公场所和场地阿，这些都是支持的一种方式。

Appendix 7.1.CaseSG97.5(2)

(2)

卢：你们现在有跟政府哪方面的和作呢？

汪：有，我们现在就在做社区。　比如说我们在温江区，因为是城乡结合带，在做得那个就是凤凰社区，它就是政府那边加业主委员会给我们提供的场地。还有包括我们现在跟其他ＮＧＯ合作的，我们给它做健康板块嘛，那个机构也是在社区作老年人服务的，我们帮它作健康板块，就是糖尿病老人的那块。

Appendix 7.1.CaseSG97.5(3)

(3)

卢：你们现在有没有政府和企业在一起和你们和作的呢？

SG97-01：目前我们就是和其中某一边合作，还没有揉和到一起结合到一个点。但是看你是怎么看这个问题了。但是单是像政府提供场地那种应该不算是合作把，因为只要你不做坏事，它都会给你提供场地，也就仅此而已了，但是根本不是更深层次的和作。我们还没有更深层次的和作。北京东城区那边不是做的挺好的马，政府也出钱买单马，还有企业参与，相当于大家又出钱又出人一起来运作这个过程。我觉得这种比较算真正的那种大家都参与进来，又定期的机制去讨论，共同去商讨去执行。

卢：现在有哪些企业和你们有交流和作呢？

SG97-01：我们现在做得企业是延续原来的。灾区助学的。也是原来比较熟的一个企业他在支持在区受灾儿童的助学，我们因为比较熟，所以延续的帮他们做这块。但是这个不是我们的中心，只是因为它是一个连续性，也不太花精力，所以就在做。

Appendix 7.1.09

SG97-01-13

目前我们就是和其中某一边合作，还没有揉和到一起结合到一个点。。。。但是根本不是更深层次的和作。我们还没有更深层次的和作。***不是做的挺好的马，政府也出钱买单马，还有企业参与，相当于大家又出钱又出人一起来运作这个过程。我觉得这种比较算真正的那种大家都参与进来，又定期的机制去讨论，共同去商讨去执行。

Appendix 7.1.CaseNGOLF.5

卢：那您觉得政府的大环境对你们有利了吗？

NGOLF-01：因该是相对来说好一些，但是肯定跟我们期望的还是有一些差距。但是整个的方向肯定是比以前要好的多。我们能够登记成功，至少它（政府）就做出了一个姿态就是说，它是希望你们公开的，在它的监管之下，在它知道的情况下，你们来做事情。它的登记也是很严格的，跟查祖宗三代查不多了，

Appendix 7.1.10

NGO49-01-07

我们是从2008年开始来做这个项目， 做到现在还是比较成功的，还是觉得一个不错的合作模式。现在，我们的总部已经迁到什邡去了，新办公楼去年已经建成了，已经开始使用了，这个地也是政府给的，我们每年呢就要在整个地区做一些社会服务工作，我想这是一种比较新的一种模式，企业呢在背后做资金支持。

Appendix 7.1.11

NGO49-01-08

LU: Besides this kind of government support in terms of giving permission to use a piece of land, were there any other types of interactions with the government?

NGO49-01: There must be…as long as you are doing things on its land, it becomes unavoidable to interact with them. This is absolutely normal. So we have regular contacts with them, be it formal or informal, work related or non-work related, many more of these kinds of interactions.

卢：这种合作政府 出地之后，还会有什么样的其他进一步联系吗？

张：那肯定会有，你只要在它的地盘上作事情，就免不了跟它打交道的嘛，这个很正常嘛，对吧。所以平常的联系也比较多。往来也比较多，有正式的也有非正式的，由因公的也有因私的，这个就很多了。

Appendix 7.1.11.01

NGO49-01-09

。。。我觉得就是由这三方来搭建一个平台，各自扮演不同的角色，把自己的资源放进去，然后来服务整个地区，就是这么一个框架，政府他们基本上是不给钱的，他们当然可以给一些土地资源阿，协调一些关系啊，还是不错的。

Appendix 7.1.12

NGO49-01-10

卢：这些三方合作的项目是以什么制度支持的呢？

张：我觉得中国人在做这种事情的时候可能跟西方人不太一样，他可能没有什么很明确的合作协议或者框架，现在托克国际的社区中心项目就是以这个为框架的。我们有一个项目管委会，就像你刚才讲的，就是以项目管委会这种形式，政府派两个代表，基金会派两个代表，我们又派几个代表组成一个管理委员会，然后社区居民还派来两个代表，共同决策这个项目应该怎么做。那么最后执行由我们来做，就是这个意思。就是利益相关方都在一起讨论。

Appendix 7.1.CaseNGO49.5

卢：您和政府之间的关系是什么样子的呢？有合作吗？

张：其实我们跟政府之间的合作是很有意思的，在国内做为基层的这种草根，当然“国”字头的就不说了，做为基层草根跟政府合作的我们算是比较多的。但是又是保持一定距离的。我们第一步是做了一个新的模式出来，在什邡的时候，我们是采用了政府+企业+NGO这样一种三方合作的模式，政府当时是出了一块土地，我们的资助方出钱修建了一栋社区中心，然后由我们来运营。我们在什邡试点这个模式还不错。现在诺基亚那个手机生产商也在我们这个模式复制在都江堰，叫阳光社区项目。

卢：您的团队遇到过那些比较大的困难呢？ 还有你们认为做的比较成功的有什么？

张：我觉得就是刚才讲的，就是这个模式我觉得挺好，我们不要去单纯的做NGO去依靠基金会或者怎么样的，我觉得把政府拉进来也是可以的，但是这个里面需要有一些技术处理，因为有可能它进来以后会影响你的判断或者独立性，所以这个是需要技巧的我想。这是一个技术层面的问题，但是我觉得从策略上讲是可以把这三方拉在一起来合作的。

从困难的层面上来讲，让我想一想。。。阿对，有时候跟政府打交道，政府的工作效率很低，我觉得这个很正常，这个也不叫困难，我们跟都江堰那边接触，那边的工作效率非常低，但是呢请他一起吃吃饭，喝喝酒，这个事情就很好办了，哈哈。所以我还是觉得这是技术层面的问题。是可以处理的，我觉得是可以克服的就不叫困难。

Appendix 7.1.13

SS-01-01

我们这个是很奇怪的一个机构，一开始是政府要搞这个东西，人家有社工，咱们也要有社工，上海那边有社工，我们这边也要有。先有社工协会，先有领导，然后再去找社工，招聘社工。人家别的行业都是先有下面的实体是吧，然后再来成立这个协会，我们是先有协会再来（下面的人）。

Appendix 7.1.14

NGO51-02-01 (Conversation)

志愿者：这边的活动中心的墙上不能随便乱画的，以前我们在墙上贴宣传海报的时候都被村支书揭下来了。它们（这个村）对这里的整体环境要求很高的，对那一块公共区域是可以贴东西的，那一快时不可以的很严格的，要贴的话只能贴到外面的那个展示架上面。

何：我觉得这个事情很有意思，这件事本来是村上的利益是一致的吗，怎么还有这些要求呢？

善：是这样的，它这个村接待人物比较重，基本上各个部门的领导都要到这里来参观，所以他就要求小区的环境必须要怎样怎样的。所以就要接受它的安排。

何：我理解，那么平时你们活动的开展的话这个信息是怎么给村民呢？是靠去通知吗？

志愿者：我们挑两三个文艺骨干和知识分子，和在村上比较有号召能力的，我们就去告诉他们。他们每天下午和晚上都在广场那边舞会，这个基本上是定时的，除了下雨之外他们每天晚上都回出来的。

志愿者：这个是我们每个月的活动展示表，由老年的，青少年的，妇女的， 每个月的（方式和活动）差别不大。

何：这个表是用于你们工作的提醒马？

志愿者：有一定的提醒做用。 去年的时候一直是放在下面的供村民们看，后来看到大家都熟悉了，就拿上来了。

何：可以用大白纸贴在公示栏里面码？

志愿者：可以，但是纸的篇幅不能太大，可以小一些，但是大了的话又赶上村上有事请，他们就会把我们的撕下来。

Appendix 7.1.15

NGO51-02-01 (Conversation)
志愿者：这边的活动中心的墙上不能随便乱画的，以前我们在墙上贴宣传海报的时候都被村支书揭下来了。它们（这个村）对这里的整体环境要求很高的，对那一块公共区域是可以贴东西的，那一快时不可以的很严格的，要贴的话只能贴到外面的那个展示架上面。
何：我觉得这个事情很有意思，这件事本来是村上的利益是一致的吗，怎么还有这些要求呢？
善：是这样的，它这个村接待人物比较重，基本上各个部门的领导都要到这里来参观，所以他就要求小区的环境必须要怎样怎样的。所以就要接受它的安排。
何：我理解，那么平时你们活动的开展的话这个信息是怎么给村民呢？是靠去通知吗？
志愿者：我们挑两三个文艺骨干和知识分子，和在村上比较有号召能力的，我们就去告诉他们。他们每天下午和晚上都在广场那边舞会，这个基本上是定时的，除了下雨之外他们每天晚上都回出来的。
志愿者：这个是我们每个月的活动展示表，由老年的，青少年的，妇女的， 每个月的（方式和活动）差别不大。
何：这个表是用于你们工作的提醒马？
志愿者：有一定的提醒做用。 去年的时候一直是放在下面的供村民们看，后来看到大家都熟悉了，就拿上来了。
何：可以用大白纸贴在公示栏里面码？
志愿者：可以，但是纸的篇幅不能太大，可以小一些，但是大了的话又赶上村上有事请，他们就会把我们的撕下来。

Appendix 7.1.16

NGO51-02-02 (Conversation)
何：村里的政府阿书记阿，他们支持我们的工作吗？
志愿者：还是蛮支持的，要不他们把这办公室让给我们。
何：他们有没有关注那边的活动的开展呢？
志愿者：关注不是很大。不过那个妇女主任还是蛮关注的。 因为她本身就是这个的爱好者。
善：我可以很放心的跟你说，因为我们来了比较久了嘛，是2009年8月过来的， 所以他们现在（对我们）是很放心的。

Appendix 7.1.17

NGO51-02-03 (Conversation)
何：那么他们对你们的场地的使用有期限吗？
善：这个具体期限没有订。也没有写什么东西。反正就是我们需要的时候就跟村上的领导一讲，它们说行，给你一个，但是他也没说给你多长时间。
何：我们现在使用的爱心超市和楼上的社区中心的是属于村民富余的部分。。。
善：房子是，就是说没有人住的。
何：但是我们也是没有什么协议去保证它可以长时间的作为居民的活动空间啊，
善：这个协议没有。
何：我担心这种情况可能会变化吗？因为比如说明天我又想在这里做生意了，是不是那块就丢了呢？
善：你谈的这个担心我们还没有想过。应该说这种可能性很小。
志愿者：这个可能性比较小，因为这个环境造就的，一般说做生意的人不会上来的，上来的都是度假阿或者避暑的，做生意的房子而且像这种空着的房子不只是这里有，其他村都有。
何：那还好，至少这个空间可以大家用嘛。。
善：怎么说呢，村上的村民对我们应该说非常好，当初村上要我们这个站要搬走，很多村民就出来为我们说话，说怎么能让我们走呢，办公室都不给一个，我们不说，村民就自己去说了。

Appendix 7.1.18

NGO51-02-04 (Conversation)
何：那么政府在这个发展计划里面对我们工作的这一块有什么期望马？它们也给我们的社区中心一个场地，也给社工站提供了一些东西。他们对我们有什么期望马？
志愿者：更多的期望就是社区文化的建设。培育出一种社区服务的社区文化。增加村民对社会的归属感，因为这里的村民虽然以前是一个村的，但是有几个小组，都住在这里以后可能本小组的人比较熟悉，碰上其他小组的人就打个招呼或者问声你好，以前来往比较少，但是现在大家都搬到一起了，毕竟和以前住平房的是后部一样了，邻里之间的关系变了。要提高邻里之间的归属感。

何: 已开始的时候是重新打乱再来，关系需要一段时间去恢复和建立。现在情况怎么样呢？
志愿者：现在活动的开展起到了一定比较好的促进作用。比如说有的人住的是一栋的，住在里面，平时可能和大家见面比较少，但是搞活动的时候聚到一起，大家聊天。
何：同类人之间的互动有加强么？比如说这边我们是把人群怎么划分的呢？
志愿者：老年，妇女，儿童，残疾人特殊家庭，这边残疾人完完全全生活不能自理的比较少，大概有 3-5 个

Appendix 7.1.19

NGO51-02-05 (Conversation)

Substantive Concentration: Livelihood Support for disadvantaged families

NGO51-02: You just mentioned about some difficult families…and what kind of families are they?
Volunteer: They are the ones composed of inter-generational family members, but they have little labor force staying with the family. For some, they lost their husbands or brothers in the earthquake.
NGO51-02: So what did we do to support their livelihood?
Volunteer: The only thing we have as of now is cross-stitch.
NGO51-02: So in what way will this business increase their income?
Volunteer: Regarding this, we have been contacting NGO49 for a long time, and maybe their operation has incurred some problem, they still haven't come out here (to help on this). Because they have confirmed us saying they will be here in half a month of one month. It's been 3-4 months now, and they still have not showed up.
NGO51-02: I found that everyone wants to use the cross-stitch business as a way for sustaining future livelihood.
Volunteer: This is because this business requires minimum amount of physical activity, which means that without stepping outside of their place, they can still take care of their families at home. It can play the role of both sustaining income and taking care of family at the same time.
NGO51-02: Were they able to earn some income now?
Volunteer: Not really, it's not sustainable.

SS-01: The problem did not just occur on our side, there is also the sales side of the picture.
Volunteer: the village close to us is also doing this and I've visited them on this, the business itself still could not solve some of the basic livelihood problems. Its sustainability cannot be guaranteed neither. 99% of the groups of people who are engaged in the cross-stitch business are not going to go outside of their communities to find work options, at least for the immediate few years.
NGO51-02: Then, this would mean that you are making your ability to earn income dependent on others.
Volunteers: Most of the women living in this community would still choose to stay and live with their families, by choosing to be a responsible daughter-in-law, taking care of the elders in the family and their sons. These are perceived to be the traditional roles of women, an ideology being held by people living in the area. The jobs for earning money should be their husbands and their sons' role.
何：刚才你还说过有些困难家庭是哪那些困难家庭呢？
志愿者：就是上有老下有小，家里劳动力比较少，有的地震的时候丈夫去世了，弟弟去世了，
何：这方面生计上我们是怎么做的呢？
志愿者：目前生计正方面还是只湘绣。
何：这个能够帮助他们增收多少呢？
志愿者：这个我们一直在和NGO49联系。但是他们不知道是因为自己的运作出了什么问题，一直都没有过来。 因为当时我们说的也比较肯定。他们当时跟我们说的都很肯定，说半个月或者一个月，甚至今天就过来， 但是现在都3-4个月了还没有过来。
何：我发现在都江堰大家都想拿湘绣来当作生计发展的一条道路。
志愿者：因为做湘绣的话灵动性比较小，就是不需要出家门，一个可以方便照顾家里面，可起起到居家就业的一个作用。
何：现在有挣到钱的吗？
志愿者：比较少，还是持续性比较小。
善：这个不光是我们这边的问题，还有销售上面的问题。
志愿者：我们下面那个村搞这个我去看过，还是不足以解决村民的一些简单的生活问题，而且持续性也无法保证，这个群体都是99%都不会出去，短期几年是不会出去赚钱的，
何：那这样的话就是把你们（做湘绣的妇女们）的收入寄托在别人身上了。

志愿者：因为这里的妇女的话很大一部分都是留在家里面，当个好儿媳妇阿，照顾家里的老人，儿子，都是妇女应该做的，这里有这种观念。打工挣钱是丈夫和儿子的事情，

SS-01: The most urgent concern is to find ways to make income. Back in the days, we used to collaborate with the women's association, and they formed collaboration with actor #125 to establish a cross-stitch assistance center. But due to some of their internal issues, these collaboration ties were cut off.
NGO51-02: But the women's association is just a mediator, if you have products, can you go to actor #125 directly and have them take care of the sales part of the job?
SS-01: That's what we are doing…but the training for cross-stitch skills is very challenging. Some things do not work in ways like if you learned and you will be able to practice well. Even the cross-stitch business will be divided into different kinds according the different skill levels. The women who are doing it here do have some of the basic trainings, but haven't engaged in long term training and practice. So we are still working on making connections, such as the one in ***Youth Center.
NGO51-02: Are they still working on it now?
SS-01: Yes, they are. But their requirements on the stitch skills are relatively high now. They also work in Dujiangyan area and have someone in charge of our area too. I just met him the other day, their requirement for the skill level is high, and I don't think the ability of the women here in our community can catch up with their standards. If you only have basic skills, they wouldn't want you to do the work. Because they are a private enterprise, there will be significant loss incurred. The skill set of some women in certain Dujianyan communities is relatively high. This is a two-way choice.
NGO51-02: Are there a lot of interests on this cross-stitch among the women in our community?
Volunteer: They are enthusiastic about it. 38 of them showed up in the first month of training. The original plan was to provide training for a week, but the training personnel promised to be sent by actor #49 never showed up…
SS-01: It's like that NGO drew us a pie in the air…they confirmed with us on that, and we would go around and tell community residents saying "make efforts into learning this skill, then we will have income sources"…the idea of doing cross-stitch is good in itself, but to really go down the road, it is very difficult.

善：现在大家最重要的就是收入问题。前期我们跟妇联在合作，妇联又跟壹基金的湘绣帮助中心合作， 但是后来因为他们的原因，合作上的问题就断了。

何：那妇联他只是个组织者和中间人，如果你们有东西有湘绣，你们直接拿给壹基金作推广做销售不行吗？
善：我们是在这样做可，但是培育这个东西是很不容易的，有些东西不是你学了就能做，它加工的东西还是有高中低档的，有些难度比较高的对你的技能要求就比较高，我们这里的这些妇女初级的技能是有的，但是没有经过长期的训练和练习。所以现在我们还是在联系，给这个阿坝的青年中心。
何：他们现在在工作吗？
善：他们现在在工作，但是人家不断的就在上台阶了，要求的技能就比较高了，他们在都江堰也在做，他们有人专门在这里负责，前两天我刚见过他，人家现在的要求比较高，可能我们的妇女作不下来。如果你只是初级的，只接受过培训，只能做初级产品，人家就不敢给你，你一绣就报废了。人家是企业，是公司， 会有损失的。都江堰其他的乡镇有的妇女的技能还是比较好的。这还是一个双向选择的问题。
何：我们这边的妇女对湘绣的积极性高马？
志愿者（LC）：积极性是很高，第一个月的培训就有38个人来参加。说是培训一个礼拜，但是他们的培训的人（备灾中心的）一直就没有过来。。。。
善：就好像NGO给我们画了一个饼，他们说的很肯定地，然后我们也就这样给村民们这样宣传，＂好，你现在好好学习，学好以后我们就可以挣钱了＂．湘绣这个想法很好，但是要真正走下去很难。

Functioning Issue #1: Community Center Activity Evaluation and Guidance

NGO51-02: What I would like to understand is that as a community center, what kinds of services we can bring to the different groups of people with special needs, and whether these services have an internal connection designed to respond to certain problem or issue, or what we are doing just reflects a repetitive type of work.
Volunteer: For the youth population, the focus of our work is on academic tutoring, and some classes in explaining social etiquette. We will use different kinds ways of teaching every time. For example, we'll use games to pass on the message…mostly on Sunday mornings. We will contact with the kids beforehand on Fridays and Saturdays. Some of those who have computers at home, we will use emails to contact them.
NGO51-02: And after each round of Saturday activities, have we stayed to further communicate with the kids and see if they have other types of needs? What I feel is that the way we judge the kids is from the perspective of their parents.
Volunteer: We try, but most of the times they would think for a long time, and were not able to express through words.

NGO51-02: Things like what they like and things they don't like, what they would like to do in the space, and what kinds of games and activities they want to do?
Volunteer: We tried once and twice, and if completely listen to them, we would have to follow them around all over the streets outside…so most of the times, and we will mainly use our own plans, but will insert some of their suggestions. For the youth activities, we are basically relying on our own schedules.

何：因为我想了解的就是作为一个社区中心它能够为一个社区的特定的人群带来了哪些服务，这些服务又没有内在的连贯性，是不是回应了某一个具体的问题，还是要重复一些简单的工作。
刘：青少年这块我们还是主要针对的课业的辅导，还有一些文明礼仪的讲解，每次都通过不同的方式，有时是通过游戏来传达着个信息，基本上都是周日上午。大概礼拜五或者礼拜六我们也会提前和孩子们联系，有些孩子家里有电脑的，我们就会和他们在网上联系。
何：那么平时我们在周六的时候在活动开展之后又没有跟孩子们聊一聊他们的需求是怎么样的呢？我感觉的到的是我们对孩子们判断是用父母的眼光来看的，
刘：也有聊过，但是大多数有时候他们就是想半天，用自己的话也表达不出来。
何：就是说它们喜欢什么，不喜欢什么，希望在这个空间里面做什么，希望怎么玩，
刘；我们试过一两次，要是完全按照他们的话就会跟着他们满街跑了。。。所以现在大部分时间是根据我们的计划走，适当的加入他们的一点意见，青少年这块还是以我们这边的计划为主，

Appendix 7.1.20

NGO51-02-06-1 (Conversation)

NGO51-02: After I have observed your work here in the community, I greatly respect your devotion to the work in these two years. You've done so many services. So when looking back to the types of the community activities you've organized, weighing between those routinized services and the goals you'd like reach, where are we now? For example, the teams specialize in women and art activities are basically pretty well organized, and they can actually organize their own activities with their own leaders. So services related to these two groups can be left to themselves. Then, have you tried to establish some new areas of services? I really want to know your thoughts in this regard.

Volunteer: ok, take the art activity volunteers for example, we used to go to them (to arrange activities), and now they would actively come to us.
NGO51-02: So you have already solved the issue related to the organization of their team, and they are basically able to organize activities on their own correct?
Volunteer: Yes, but their ability to making connections to outside sources is limited
NGO51-02: Is connecting to the outside resources meaning making contacts? Are they able to make these contacts on their own?
SS-01: they could but relatively weak.
NGO51-02: Can this kind of ability be developed through your support?
Volunteer: This is basically because of their limited contacts as a result of their living arrangements, they have fewer opportunities to meet outside people…
NGO51-02: If through your referral, can they pick it up on their own over time?
SS-01: On this end, they have not done enough.
NGO51-02: Have you tried to teach them through your work?
SS-01: Yes, sometimes, they would help each other out if things happen, and if there is a need to borrow dance clothes for shows, they would go and do it on their own. But many of the daily matters, they still lack the skills to make effective contacts with outside.
NGO51-02: You mean that the ability of these volunteer leaders to coordinate resources in the community still needs improvement, is that right?
SS-01: They are OK for making contacts inside the community but not those outside the community.

何：我看了你们在这里工作之后，还是很钦佩你们两年在这里工作这么久了的。做了不少的服务。那么社区活动的开展的话，他们有变化啊 ，你们觉得我们做了这么多的常规性的服务和在达成你们的目标的同时，在什么样的一个位置呢？比如说妇女的和文化的团队的组建已经好了，他们可以自己开展，骨干也有了，这个服务的话你们可以让他们自己来做，那么你们的服务有没有去调整更新去开辟服务呢？就是说我想知道在这一块你们的思考是怎么样的呢？
志愿者：欧，那我举个例子吧，文艺志愿者，以前是我们主动找她，现在翻过来他主动找我们，
何：那就是说这一块你们已经解决了他们团队的问题，还有一些基本的工作的怎么去带动组织阿，他们自己都可以做了是把？
志愿者：他们能够做的话，但是他们对外的资源可能相对来说会缺乏一点。
何：对外资源主要是负责联络是马？他们自己可以去联络马？
善：他们这方面可能能力就会相对来说弱一点。
何：那么这个能力是不是能通过你们的支持他们有可能能具备的马？

志愿者：这还是一个他们的人际关系，因为他们的生活圈子比较小，比较窄，无法认识更多的外界的人，
何：如果通过你们引荐的话他们可能承担起来吗？
善：应该说这方面他们做的还不够。
何：那你们在平时的工作中教给他们吗？
善：有，有的时候他们会去联系，有个什么事情比如说大家帮帮忙，比如说去借别人的服装，由表演之类的，他们会主动去联系借服装。但是日常的很多东西他们还是没有办法有效的去联系。
(志愿者：我们的志愿者本身现在感觉工作比以前安排还要满)。
何：你的意思是说这部分志愿者的骨干在社区里面资源协调的能力还不足是马？是这个意思吗？
志愿者（加善）：对外的不行，对内的可以。
(何：对外的就是还是要借助你们是把。
善：就像刚才 FY 说的，有些老的志愿者很忙。都江堰老年团队，尤其是城市里的老年团会，也都不年青了，他们很忙的，像我们这个志愿者团队都有备份的，都有几个团队，和同事联系几个团队。然后就有一个交叉)。

Appendix 7.1.21

NGO51-02-06-2 (Conversation)
卢：如果分歧产生了你们怎么解决呢？要跟他们谈和沟通是把。
何：还没有太遇到，别的中心没有这种情况，这里是唯一一个和政府一起合作办的中心，那我想我们就就事论事吗，我么是讲实物，我想我们首先要把这个项目是要干什么的，虽然有合作协议，但是高不清楚，思路还是很不一致。如果要是长期话，那么我们要去看最大的共识在什么地方。有共识的话当然就最好了，再梳理一下在当前的重点工作是什么。首先是我们恩派为什么要通过这么一个项目，感觉就是说有一笔钱，但是它为什么要给这笔钱和他给的目标，这些方面还有沟通的各种必要在里面。目前这次的评估检测工作是有组织的，就是它的人员流动和财务管理，这两个的话，人员流动他们挺低的，因为是政府的马，流动费用是固定的，所以他们不存在人员流动的问题。然后财务管理方面他们的规范性方面也不存在什么核心问题，其他的是关于专业团队和他们的工作缺乏专业性这方面，要把工作做专业就要有有专业能力的人。

Appendix 7.1.22

NGO51-02-07-1

那现在的话他们说志愿者骨干对他们产生很大的依赖的话，就是说我们社区中心这个项目和社工工作的目标是能够让这个社区人和人之间的关系融合之后社区里面能够去解决自己面临的一些问题，包括你的文化娱乐活动的这些需要。其实你自己可以解决。那么目前看来是有这些人有这些活动，只是他们对外联络的这一点上有欠缺。或者你的沟通缺了一些技巧和能力，或者一些思考问题的方式还是需要借助他们的帮助。那么他们在这些方面能够做些什么，就可以让社区不用一直依赖下去。他们不是因为造成依赖而工作的，他们是为了使别人能够自己解决问题而工作的。一个好的社区中心我们首先希望它是能够首先是居民们愿意去参与公共活动的地方。当它变成了这样一个地方之后，社区中心就会给社区人与人之间关系良好的沟通带来一个很好的促进，这种促进又会让大家更加愿意一起去商讨解决公共事务，怎么会有公共协调和化解冲突，这种能力是可以在活动中去带动的。这些深度的专业上面的要求的话是目前中心没有做得。表面上就是一团热闹的气氛

Appendix 7.1.23

NGO51-02-07-2

The right order is to help them self-organize and to develop their own awareness. The role of the social workers is an only a complementary one. Through the activities, they need to pay attention to the emergence of those who are highly active, communicate with them, and nurturing the development of their capability and motivations. If they realize that these things are actually all relevant to their own community, and if the entire community is well, then their own lives will be well too. They should be able to see that everyone is part of the community, and are confident in their ability to give to the community and thinking it is a good thing to do. If the residents could hold such a point of view, then, the center can come in and provide guidance and communicate with them to further develop their actual skills. Just give them the essential things, and how they would like the service to be performed could be something left to them to decide. By then, the social workers at the center will become a guide for these community leaders, supporting them to resolve community affairs. The center should not have the intention to intervene in the activities long term. (NGO51-02)

应该是让他们自己组织自己去发现。然后这些社工只是作为辅助，因为在活动中，他们要去发现一些积极分子，发现了以后呢，有意识的和他们去沟通，去增进他们的能力和动机。如果他们发现这些事是我们社区的事，社区好了我自己也就好了，

大家都是一个社区的人嘛，他要觉得自己又能力和能够为这个社区付出也是一个挺好的事，如果社区的人能够有这么一种看法，这个时候就能够在动机和技巧上面能通过辅导和沟通。 东西给到他，到后来他们怎么愿意去做服务就可以由这一群人来讨论。 讨论的过程中可能面临又一个人话语很重，下来的时候，（社工就可以帮助解决），这个时候社工就变成了这群骨干的一个督导，支持他们自己去解决社区里面的问题，社工是不能长期去介入活动的本身的。(NGO51-02)

NGO51-02-08
如果你是一种成全，让别人去发现去释放它的能力嘛，那么这个别人（被帮助的对象）是有能力的，不是没有能力，只是你要去打破它因为环境或者说是因为个性什么的造成的一些障碍，。帮她们跨越这些障碍以后。人是有能力的，不是非要别人去解决的。(NGO51-02)

Appendix 7.1.24

SS-01-03
“For this particular village, when its residents started to live in a concentrated style after the earthquake, its governance style can be summarized in eight characters: self-organized and governed by community residents. It’s their own community and they should have their own people governing it. This includes patrol duties…like those performed by elder women…they would take turns and patrol around the community every day. Since this community is open to the public, so it needs patrol on duty. In our urban communities, we have property management firms, but if for community here to hire those firms, it would raise their living cost indirectly. Therefore, this is how we would want to have our residents to get out of their homes and participate more in community governance affairs. This way, they will care more about the place where they live. Including when we establish the small supermarket here, these are the ideas that prompted us to build it in the first place. (SS-01)
鹿池这个地方呢，原来地震过后，集中居住之后，它的模式在都江堰来说八个字：群设群里，群芳群治。自己的小区全部是由自己的人来管理。包括执勤，包括像这些老人，老太太，她们每天都要值班，晚上也是100多户人，能换得，24 小时马，因为这个小区是开放式的，所以必须要有这些执勤的。咱们成是社区里面还有物管，但是说如果我们这个小区如果说有物管的话就会变向的增加了生活成本。所以我们

就是怎么样去能让老百姓引出家门，更多的去参与社区的管理。更多的去关心自己的家园。包括我们后来的爱心超市，这些都是基于这个考虑。

Appendix 7.1.25

SS-01-02
我们当时介入这个社区也是因为这个农村新型社区，集中化居住，有原来的农作的散居，到现在的集中化的居住。那么有一个适应性的问题，有一个对这个社区的认同和归属感的问题，基于在这个目标我们进入到这个社区里面来。我们就想通过这些一系列的活动把老人，妇女，把他们从家里面引出来，参与我们的这个活动，在参与的同时让他们又意识的来关心自己的社区。我们本身是有一点政府的味道，因为我们是民政局主管，那么我们很多工作要求我们就要配合基层政府，我们基层政府关心的是什么，他们想解决的是什么问题，那就是我们要去关心的问题.

Appendix 7.1.26

NGO51-02-09
社区在灾后被打乱重组了以后呢人们的交往呢是需要有一定带动的。社区事务的解决是需要社区居民来参与的，那么这段路是期望我们把社区中心把它变成一个公共活动空间的方式去带动社区的这种人际的交流。通过活动的方式带动他们的交流以后他们能够在这种活动的交流中曾进彼此的信任和关系，一起去发现怎么样去探讨问题，去建立起这样的意识和能力。那么通过这种方式的话我们就够带动社区力量最终能够良性去参与社区公共事务的管理和解决。
那么第一步就是要实现这个社区中心它要成为整个社区的公共活动空间第一个就需要他有一个亲和力和凝聚力。第二点就是这个社区中心本身它传达个居民的（概念）是这里真的是我们可以到里面去的，我到那里去就可以得到服务，我是那里的像主人一样的，有人在那里给我提供服务，我也觉得我自己的能力有所增强，觉得在那里我解决我的某些需要，这就是在社区中心里面我们为什么要对社区里不同的人群去设立一些服务。(NGO51-02)

Appendix 7.1.27

NGO51-02-10

***#1:* 和谐社区的助推者**

善：参与，包括方方面面把，就是说大家在一起经常开展活动，大家在一起有时候就会遇到村里的事情，变相的大家就会参与到村上的公事中来了。

何：大家在一起跳舞的时候会去谈论，但是这种谈论是什么呢？

善：这个都不定，有时候引出来这个问题过后，比如说有时候你只需要抛出个话题，她们自己就开始讨论了，

何：这样活动的组织是谁来组织的呢？

善：活动组织是我们组织，我们以跳舞，或者某天的茶话会，比如说我们有一个叫做“回忆往事”的一个活动，我们四川人爱在一起摆龙门阵。来回忆过去。这些老人里面她们的经验是很丰富的。就是说在他们聊得时候比如说我们有意无意之中就抛出一个话题，然后他们自己就会去讨论。

何：那他们讨论的结果是什么呢？

善：有些是没有结果的。

何：那么就是说我参与社区事务的方式是讨论。。。

善：就是说大家都知道这个事情。

何：那这个是对政策的宣传马？那么如果需要我去参与的话，我应该是参与的过程的解决，是对某一个事件的解决。如果只是议事的话，那么议事之后的情况，比如说传达我的意见之后他们是怎么实施的他们也就不会参与了是吗？

志愿者：这个不会因为村上每一个月的时候都会组织村民开个议事会，广泛征求群众的意见，然后大家一起去讨论，有什么意见可以提，大家可以讨论，合理的村上的干部一定会采纳。

善：每个村都有一个自己的村民议事会，村民议事会是有成员的。

志愿者：比如说你对村上有好的建议之类的就可以提。向村上的领导干部进行表达。

善：抛出一个话题她们在讨论的时候可能有些人的观点不是很正确，很偏激，在这个时候呢，我们可能就会提出来，我们也不会说你说的不好或者说的不对，我们就会说实际上这个事情应该是这样的。

何：就是说在这个时候在社区的公共事务里面我们会协助和辅助政府去积极地去沟通

善：好像是一个传声筒的这样一个作用。你要说要很明确的要达到一个目的，可能我们还没有能力去达到。只是我们会传达一个比较正确的。。。因为农民那，有些东西比如说开会或者有些东西张贴出来，文件之类的，他们看不懂，看实质理解他们理解不了，她们会理解的有偏差。那么通过这些方式在活动中去介入，增加大家对社区的认同和归属感。

何：那么对鹿池村阳光社区中心的一个工作目标，你们想达成的一个目标项目是怎么看的呢？因为我们先定位一下鹿池村阳光社区中心，你们希望我们有一个什么样的角色，去实现什么样的工作目标呢？
志愿者：应该说是一个和谐社区的助推者吧。
善：应该是这样，就是所有活动的所有目的应该就是这个目的。增进社区的和谐。

Appendix 7.1.28

NGO51-02-11

#2：社区能力的助推者

在我们看来理想的状况没有必要随时要有很多的东西，看起来很热闹，热闹这只是一个层面的东西，就是说参与者活动的人是不是真的体验到了参与其中的快乐，这个过程中没有报怨，也愿意相互支持。我想社工里面有提过一句话，就是要曾强服务对象的社会参与的和社会支持的能力。
， 如果一群人就在那里跳一下舞，只是自己享受一下，跟别人没有关系的话，这也算是一种表面现象了。这也不是我们真正想看到的社区活动的面貌。它表面上看起来好像是很热闹，但是并没有促进人和人之间的关系的改良，没有促进我们共同去关注什么事务，那么这种活动就不会带来真正上的社区活动的改变。这种活动就算是一直做下去社区的人的改变还是不会很大。

Appendix 7.1.29

NGO51-02-12

因为我们要看到一个社区里面社区的能力的成长是和社区里自己组织起来的这些志愿团队，就是自己服务自己的团队的成长是统一结合的。那么这些团队成长起来的一些状况就跟我们和社区中心的工作的一个成效是直接相关的。我们会看说是不是社区里面老人的团体出来了，有一群的老人家愿意主动到这个团队里来担当的更多，他也知道该怎么去做事，该怎么去组织，我们是在关键的地方给他们支持，给一些建议，给他们一些特别的资金的支持区辅助他们的活动的执行。然后比如说在妇女，青年的小组里面针对教育的，生计的阿，各自有这样的小组出来，各个小组自己有自己的活力，我们是这样认为我们应该是怎样去做社区服务的。如果沟通以后我们可以达到更好的共识的话，我们的工作和合作都会觉得更加的顺畅。

Appendix 7.1.30

NGO51-02-13
我们应该怎么去看待村民呢，不是说他不原意展现它的善意，也不是说他就看中名利天生就喜欢爱嚼舌，是有很多原因的，所以我就想首先就是要去相信他们，他们本身是有行善的这种能力的，我们要看因为什么愿因导致他就没有办法展现它的善意，没有办法去放弃他个的那一点小小的利益，没有办法服务，去停止嘴巴不停的抱怨，这些都是有原因的，那么这些事情打开之后，真的这个人就发展了，会有另外一中状态和一种修养，他也会去完善自己个人的家庭关系社区关系。…

Appendix 7.1.31

NGO51-02-14
我自己有时候都在想，我自己平时怎么能在工作中，即便是他们是不识字的人，我们也应该像应该怎么样和他们去沟通，去理解他，让他们心里这种愿意为善的动机怎么去鼓励他，去激励他，去增加他的动机和他的能力。这些都需要我们有很多耐心的。

Appendix VIII. Chapter 8 Appendices

Appendix 8.1

Explanation of Global Centrality

The concept of *closeness centrality* takes into account of this factor into consideration by widening the lens of looking at centrality of an actor towards its distance to all others in the network rather than focusing only on those in the local environment. Technically, the way that the UCINET network analysis program calculates closeness measures is by taking all the actors in the network into consideration, including those that are "isolates". In the context of this study, note that those that were disconnected to the network particularly before the earthquake also happen to be civil society actors that only came into being after the earthquake. However, the calculation of closeness measures does not take this factor into account and the formula will treat the whole network to be a disconnected one. Thus, the distances among the isolated actors and the connected part of the network are defined as infinite. This makes the interpretation of the closeness measure results rather difficult.

Appendix 8.1*A*

Sample of Actors with High Betweenness Measures (Communication)

Pre-earthquake

FREEMAN BETWEENNESS CENTRALITY

Input dataset: NGO info commu_pre_eart

Important note: this routine binarizes but does NOT symmetrize.

Un-normalized centralization: 69241.003

		1 Betweenness	2 nBetweenness
86	51	515.167	2.765
23	119	254.533	1.366
97	61	191.750	1.029
43	137	191.633	1.029
3	100	175.500	0.942
107	70	121.567	0.652
52	20	81.467	0.437
11	108	79.000	0.424
20	116	54.000	0.290
101	65	50.067	0.269
50	19	44.933	0.241
56	24	19.067	0.102
92	57	19.000	0.102
126	88	15.700	0.084
40	134	10.567	0.057
132	93	9.250	0.050
33	128	5.817	0.031
9	106	4.150	0.022
7	104	3.500	0.019
10	107	3.167	0.017
112	75	2.167	0.012

Actors

DESCRIPTIVE STATISTICS FOR EACH MEASURE

		1 Betweenness	2 nBetweenness
1	Mean	13.420	0.072
2	Std Dev	56.847	0.305
3	Sum	1852.000	9.940
4	Variance	3231.634	0.093
5	SSQ	470819.813	13.562
6	MCSSQ	445965.438	12.846
7	Euc Norm	686.163	3.683
8	Minimum	0.000	0.000
9	Maximum	515.167	2.765
10	N of Obs	138.000	138.000

Network Centralization Index = 2.71%

Appendix 8.1*B*

Sample of Actors with High Betweenness Measures (Communication)

Emergency Response

FREEMAN BETWEENNESS CENTRALITY

Input dataset: NGO info communication_

Important note: this routine binarizes but does NOT symmetrize.

Un-normalized centralization: 332517.100

		1	2
		Betweenness	nBetweenness
62	3	2462.522	13.217
56	24	1930.380	10.361
86	51	503.872	2.704
4	101	361.517	1.940
67	34	360.856	1.937
43	137	177.727	0.954
12	109	139.263	0.747
135	96	137.330	0.737
7	104	133.148	0.715
97	61	129.802	0.697
28	123	102.254	0.549
40	134	94.418	0.507
3	100	90.526	0.486
73	4	80.796	0.434
10	107	77.554	0.416
92	57	73.797	0.396
111	74	66.646	0.358
95	6	55.777	0.299
70	37	52.111	0.280
41	135	49.346	0.265
23	119	45.450	0.244
113	76	30.364	0.163
132	93	29.380	0.158
106	7	22.402	0.120
123	85	14.799	0.079
19	115	10.812	0.058
5	102	9.960	0.053
126	88	8.970	0.048
65	32	8.366	0.045
122	84	8.060	0.043
93	58	7.748	0.042
11	108	6.479	0.035
116	79	5.360	0.029
134	95	4.406	0.024
22	118	2.665	0.014
107	70	2.552	0.014
50	19	2.527	0.014
101	65	2.286	0.012
38	132	1.925	0.010
35	13	1.408	0.008
24	12	1.396	0.007
76	42	0.820	0.004
82	48	0.811	0.004
88	53	0.740	0.004
9	106	0.569	0.003
136	97	0.435	0.002
37	131	0.311	0.002
98	62	0.185	0.001
130	91	0.132	0.001

DESCRIPTIVE STATISTICS FOR EACH MEASURE

		1	2
		Betweenness	nBetweenness
1	Mean	52.978	0.284
2	Std Dev	270.342	1.451
3	Sum	7311.000	39.239
4	Variance	73084.938	2.105
5	SSQ	10473045.000	301.685
6	MCSSQ	10085721.000	290.528
7	Euc Norm	3236.208	17.369
8	Minimum	0.000	0.000
9	Maximum	2462.522	13.217
10	N of Obs	138.000	138.000

Network Centralization Index = 13.03%

Appendix 8.1*C*

Sample of Actors with High Betweenness Measures (Communication)

Recovery

FREEMAN BETWEENNESS CENTRALITY

Input dataset: NGO info commu_recovery_

Important note: this routine binarizes but does NOT symmetrize.

Un-normalized centralization: 386353.714

		1	2
		Betweenness	nBetweenness
62	3	2844.578	15.267
86	51	841.803	4.518
56	24	327.859	1.760
41	135	300.838	1.615
24	12	246.637	1.324
132	93	200.458	1.076
40	134	162.598	0.873
65	32	133.476	0.716
23	119	106.157	0.570
97	61	103.042	0.553
28	123	91.556	0.491
113	76	87.340	0.469
12	109	79.253	0.425
95	6	75.073	0.403
100	64	61.847	0.332
50	19	57.998	0.311
92	57	56.981	0.306
15	111	44.634	0.240
70	37	41.803	0.224
43	137	41.540	0.223
135	96	26.248	0.141
10	107	25.864	0.139
98	62	24.404	0.131
67	34	23.656	0.127
122	84	22.096	0.119
123	85	18.516	0.099
3	100	17.089	0.092
106	7	16.732	0.090
52	20	15.823	0.085
111	74	15.241	0.082
136	97	14.841	0.080
73	4	14.096	0.076
130	91	11.847	0.064
7	104	7.570	0.041
29	124	6.859	0.037
18	114	4.269	0.023
19	115	4.145	0.022
93	58	3.798	0.020
22	118	3.041	0.016
101	65	2.754	0.015
11	108	2.683	0.014
4	101	2.510	0.013
9	106	2.483	0.013
126	88	2.340	0.013
35	13	1.533	0.008
112	75	0.810	0.004
88	53	0.672	0.004
5	102	0.282	0.002
38	132	0.246	0.001
37	131	0.078	0.000

DESCRIPTIVE STATISTICS FOR EACH MEASURE

		1	2
		Betweenness	nBetweenness
1	Mean	44.913	0.241
2	Std Dev	254.468	1.366
3	Sum	6198.000	33.265
4	Variance	64753.762	1.865
5	SSQ	9214390.000	265.429
6	MCSSQ	8936019.000	257.410
7	Euc Norm	3035.521	16.292
8	Minimum	0.000	0.000
9	Maximum	2844.578	15.267
10	N of Obs	138.000	138.000

Network Centralization Index = 15.14%

Appendix 8.1*D*

Sample of Actors with High Betweenness Measures (Collaboration)

Pre-earthquake

FREEMAN BETWEENNESS CENTRALITY

Input dataset: colla138_pre_EQ_updated

Important note: this routine binarizes but does NOT symmetrize.

Un-normalized centralization: 4770.000

		1 Betweenness	2 nBetweenness
3	100	35.500	0.191
107	70	26.000	0.140
43	137	23.000	0.123
23	119	17.500	0.094
97	61	5.000	0.027
52	20	4.500	0.024
50	19	4.000	0.021
7	104	4.000	0.021
112	75	3.000	0.016
126	88	3.000	0.016
101	65	1.500	0.008
132	93	1.000	0.005
86	51	1.000	0.005

DESCRIPTIVE STATISTICS FOR EACH MEASURE

		1 Betweenness	2 nBetweenness
1	Mean	0.935	0.005
2	Std Dev	4.464	0.024
3	Sum	129.000	0.692
4	Variance	19.931	0.001
5	SSQ	2871.000	0.083
6	MCSSQ	2750.413	0.079
7	Euc Norm	53.582	0.288
8	Minimum	0.000	0.000
9	Maximum	35.500	0.191
10	N of Obs	138.000	138.000

Network Centralization Index = 0.19%

Appendix 8.1*E*

Sample of Actors with High Betweenness Measures (Collaboration)
Emergency Response

FREEMAN BETWEENNESS CENTRALITY

Input dataset: colla138_emergency_updat

Important note: this routine binarizes but does NOT symmetrize.

Un-normalized centralization: 141264.401

		1 Betweenness	2 nBetweenness
62	3	1050.467	5.638
23	119	501.083	2.689
56	24	329.733	1.770
43	137	292.017	1.567
3	100	213.283	1.145
70	37	200.700	1.077
22	118	137.733	0.739
122	84	83.333	0.447
113	76	81.417	0.437
40	134	78.500	0.421
7	104	74.833	0.402
126	88	74.000	0.397
65	32	72.583	0.390
41	135	57.083	0.306
95	6	53.833	0.289
97	61	44.417	0.238
28	123	43.317	0.232
12	109	42.833	0.230
106	7	37.583	0.202
132	93	37.583	0.202
19	115	29.833	0.160
107	70	27.083	0.145
98	62	27.000	0.145
9	106	24.000	0.129
101	65	15.250	0.082
52	20	13.833	0.074
67	34	11.833	0.064
11	108	8.167	0.044
4	101	8.000	0.043
86	51	7.833	0.042
24	12	5.000	0.027
20	116	4.833	0.026
29	124	3.833	0.021
112	75	3.333	0.018
92	57	2.333	0.013
134	95	1.000	0.005
50	19	0.500	0.003

DESCRIPTIVE STATISTICS FOR EACH MEASURE

		1 Betweenness	2 nBetweenness
1	Mean	26.812	0.144
2	Std Dev	107.966	0.579
3	Sum	3700.000	19.858
4	Variance	11656.602	0.336
5	SSQ	1707813.875	49.195
6	MCSSQ	1608611.000	46.337
7	Euc Norm	1306.833	7.014
8	Minimum	0.000	0.000
9	Maximum	1050.467	5.638
10	N of Obs	138.000	138.000

Network Centralization Index = 5.53%

Appendix 8.1*F*

Sample of Actors with High Betweenness Measures (Collaboration)
Emergency Response

FREEMAN BETWEENNESS CENTRALITY

Input dataset: colla138_recovery_update

Important note: this routine binarizes but does NOT symmetrize.

Un-normalized centralization: 193648.878

		1 Betweenness	2 nBetweenness
62	3	1451.303	7.789
86	51	834.351	4.478
23	119	699.337	3.753
41	135	530.664	2.848
132	93	405.966	2.179
67	34	344.801	1.851
56	24	304.709	1.635
43	137	227.781	1.223
40	134	202.590	1.087
95	6	190.734	1.024
97	61	184.652	0.991
22	118	140.317	0.753
20	116	130.521	0.701
70	37	123.416	0.662
100	64	120.341	0.646
92	57	118.530	0.636
50	19	105.852	0.568
7	104	104.900	0.563
113	76	94.493	0.507
24	12	80.704	0.433
65	32	40.213	0.216
3	100	36.056	0.194
28	123	31.097	0.167
122	84	23.500	0.126
98	62	22.933	0.123
12	109	14.152	0.076
136	97	13.164	0.071
29	124	12.059	0.065
107	70	11.450	0.061
52	20	8.600	0.046
11	108	7.333	0.039
101	65	5.889	0.032
18	114	4.750	0.025
19	115	3.750	0.020
15	111	0.091	0.000

DESCRIPTIVE STATISTICS FOR EACH MEASURE

		1 Betweenness	2 nBetweenness
1	Mean	48.051	0.258
2	Std Dev	168.505	0.904
3	Sum	6631.000	35.589
4	Variance	28393.992	0.818
5	SSQ	4236995.500	122.050
6	MCSSQ	3918371.000	112.872
7	Euc Norm	2058.396	11.048
8	Minimum	0.000	0.000
9	Maximum	1451.303	7.789
10	N of Obs	138.000	138.000

Network Centralization Index = 7.59%

Appendix 8.2

SG3-01-18

其实现在这个学习项目，包括我自己在内也会有一些疑惑，因为你的这个产出有时候像一些意识上的产出是没有办法衡量的，这个东西到底有多大，是不是有用的，你没有办法去衡量。而且像现在这样一个学习平台我们每次都有大概50 个人的规模，你的活动到最后你希望的一个产出到底是怎样的，比方说是能够在这个过程当中是不是有一些人真正能够成长起来，这个事你非常看重的，还是在更大的意义上普罗大众的概念上让大家对于不管是NGO有了这样一个意识，所以我觉得这个项目接下来，如果这一期的项目完了以后要有第二期，第二期可能就会遇到很多的疑惑，不可能说还是这样的做下来，会有一些改变。这个是一个问题。

Appendix 8.CaseSG3.6

(1)

SG3-01: 还有一个问题就是，我觉得做为 5 1 2 中心这边蛮好一点就是，你不管是它是一个信息平台也好，服务平台也好，或者说现在做一个所谓的学习平台也好，这些也不能说是不重要的，我个人更看重的是，其实这便是一个情感联络的平台。

(2)
SG3-03:我们的想法就是只要还有NGO在灾区工作，那么我们这个机构按说它就应该生存下去。因为你想，有好多机构都是刚起来的。又在灾区，要通过这里来，那么一些信息的传达，包括像我们这会有各种各样的他们要来开会阿，办班阿，临时在这里办个工阿，这种都有的。(SG3-03)

Appendix 8.3

SG3-01-19

你知道尤其是在现在这样一个很多的NGO从业者的工作状态或者是生存状态的情况下，大家是需要一些情感的维系的。你会知道你不是一个人。就是通过各种各样方

式来知道你不是一个人。我觉得这个方面是我每次想起来的时候会觉得蛮自豪或者说温暖的一个东西。

Appendix 8.4

NGO51-01-15
说实话，这个圈子本身就比较小，之前在做这些事情的时候大家都有些接触马，也会聊，因为我们也会在成都开展各种各样的活动，我们对我们的活动也会也会做些宣传。宣传的时候我们也会介绍我们除了现在这个项目还会有哪些项目，我们这个项目主要是做什么。那有些人听了之后可能就会感兴趣，就会找我们来聊。
因为现在很多机构他们自己想发展，但是找不到一个好的方式。就是不知道我要怎么走。就像你刚才说的“512aid” 他们，他什么都不缺但是就是不知道自己的方向是怎样的，也不知道怎样朝那个方向去走。我们就是希望能够为这些初创期的（社会组织）愿意致力去做的，由强烈意愿要去做这个事情的人提供一个比较好的方式。帮助他们扶植他们一起去走。把我们以前的一些经验可以分享给他们。

Appendix 8.5

SG123-01-05
我来四川 3 年多了，我对绵竹汉旺有感情, 地震第二天去那里救援，见到很多惨不忍睹的场面，很有感情了，这几年在绵竹做事情，也是动力之一吧。（我们团队能不能发展壮大）主要是看政府， 和他们的态度有很大关系。

Appendix 8.6

SG123-01-06
也许不在四川做了, 去更贫困的地方，四川这里本来也不贫困，其实四川贫困的地方都不在成都平原上，在西部山区和东部山区，以后也许去其他更加贫困的地区去做些事情，是啊，我以前的网名是行者无疆，现在还能跑，再跑几年，跑不动了再安定下来吧

Appendix 8.6.01

SG123-01-07
恩，我做志愿者都觉得饱受打击，但还是有对老百姓的感情支持我坚持下去
能，我这几年也是克服很多困难，也是锻炼自己.

Appendix 8.7

SG123-01-07
恩，我做志愿者都觉得饱受打击，但还是有对老百姓的感情支持我坚持下去能，我这几年也是克服很多困难，也是锻炼自己.

Appendix 8.8

SG97-01-14
我觉得要做有的时候还是关键在自己。就是说你自己的能力啊和效果阿能够更系统一些。然后资源方面我自己倒是看的比较平和，就是能申请到资金就申请，然后能做多久就做多久，我不是一个纠结于要把这个事弄得怎么样的。我没有那种抱负就是非要把这个事做成什么什么的，我们自己的团队也没有说非要把这个事弄成四川什么什么，或者说我们一定申请到政府资金之类的，因为这种事是天时地利人和，不是自己可以强求的，反正有这个心，尽力去做就好了。因为对我们来讲有个好处就是，其实我们都是专业人才，我不做NGO我也挺好的，我也不是非要通过NGO来满足我内心的需求或者体现我的价值，当然这是一种方式，但是不是唯一的方式。

Appendix 8.CaseSG97.6

SG97-01:
因为成都比较特别嘛，搞城乡一体化马，但是说实在的，再一体化也还是有差别的嘛。就是在城市和乡村的边缘有个模糊带。。。因为我们原来选也是想选那种蛮有特性的那种，城乡结合带回有一个模糊地带马，即使是城乡一体化，但是你也知道城市和农村是不一样的。而且也特别牵扯到以前农村和城市交界的地方。
卢：你说的“社区”是指的什么样的呢？
汪：是城乡社区。我们目前选的点是城乡社区。就是说是在城乡结合带的社区。
卢：不是现在建的新农村的那种吗？
汪：不是的，那时完全不一样的。

Appendix 8.9

SG97-01-15
那块的人其实是很有意思的，因为它可能农转非看上去好像是城市的人了，但是有很多内在的东西他不是。但是别人又把他们当作城市的人来看，所以他很多东西包括内在的和外在的都没有到位的，所以这样的人群是我们选择想去做的。他们也都住像这样的楼房阿，你表面看还都不错，其实你了解多了你就会知道还有很多是没有建起来的。你硬件是上去了，但是配套的东西很多是没到的。不管是配套的服务还是配套的理念阿之类的。

Appendix 8.10

SG97-01-16
所以我们和作的社区都是有这种特性。我们跟社区尽量都是如果有被认可的，社区也会在它的范围内支持我们的。他们虽然也没有什么钱，但是它们也会在它们的能力范围内去帮我们印点宣传品阿之类的，来让更多的人能够获得，因为我们的宣传品也是健康知识吗。本质上也是为了大家获得更多的健康知识。后面我们也会开一些活动，他们（社区）也会在它的能力范围内去给你一些支持。

Appendix 8.11

SG4-01-02
“需要在思想上把社会上的问题和发展想清楚后，然后希望影响到团队队员的思想和心中。这样，就算也许现阶段不会对公民社会 的发展产生即时的作用，但是可以有思想上的储备，将来会有用。

Appendix 8.12

NGO49-01-11
卢：您的团队以后有什么将来发展的打算吗，方向或者目标？
张：这个一时半火也说不很清楚，这个。。。公民社会其实发展的很不成熟，属于一个初级阶段，所以我们希望能够探讨一种好的方式和一种好的生存的模式，可以供大家复制，所以说我们是一边做行动，一边做研究。就是行动研究。只不过这个

过程可能很长，因为我们要自己走过这条路才知道，中国人的路是中国人自己走出来的，照搬国外的经验很多都不适合，中国的社会阿，还有我们的政治结构阿，还有国情完全不一样，所以这个是很痛苦的。现在很多的关于 ngo 治理的培训都是舶来品，根本就不是和我们国内的机构，你看每年从那么久，1986 年是联合国第一批国际援助金以后呢，NGO 呢就开始逐渐的发展一直到现在，民间的有几十万家，每年都做这个能力建设，但是做出来的效果好像都不太好，因为它的教材和它的大的背景都是舶来的，都是从西方（学的），基本上都不太适合。所以说我们想做一个自己的模式。就是这么一个简单的想法，但是这个简单的想法估计得用好几十年。(NG049-01)

Appendix 8.13

NGOLF-01-05

“但是反过来讲，民政局它也不愿意做我们的主管单位，那我们就属于无主管单位。就这样定义了”。(NGOLF-01)

NGOLF-01-08

因为我们无主管单位，所以我们爱干什么就干什么，只要我们不违法，当然有章程的嘛，章程就是你的宪法，比如说我们的章程是做志愿者训练，做社会工作交流，当然他们也给我们写的也挺广的，我看这两条也够宽的了，社会工作交流是一个很宽很宽的概念嘛，交流怎么交流呢，这一方面也体现出它们（政府）也不太了解。有一次一个记者就问，那你们觉得麻烦事情是什么呢？其实麻烦的事情就是它突然间告诉你什么都可以做了，我们反而不知道该做什么不该做什么了，反而不清楚了，以前就是我们要做什么，看你有什么反应，现在是给了我们一个筐，（我们）也不知道那些可以装进来，那些不能。

Appendix 8.14

NGOLF-01-09

但是他也没有办法管理，他们(政府部门)现在要承担什么义务我们也不知道。我们只是知道我们不能犯法，不能做明显是违法的事情，我们现在是登记了吗，但是对于一个登记了的组织来讲，我们对它要做什么事情，我们到现在都不知道，它到现

在也没有跟我们讲清楚。是不是一个月要交个报表阿之类的，它也没有向我们提出这种要求，我们也没有搞懂。而且我们也在询问这方面的专家，也没有人给我们答复，他们都不清楚.

Appendix 8.15

NGOLF-01-10

本来我们就没有问题，但是我们不做报告就不明不白的，你也觉得我们不明不白的，我反而觉得你还不如叫我向你报告这个月我做了什么事情，下个月我做什么事情，然后我的钱是过来多少，花到哪里去了，好像有个报告反而还好一点，要是没有报告， 反而是个担心，那天你（政府）说我怎么样了，我还真的说不清楚了呢。所以它现在没有这样的细则，

Appendix 8.16

NGOLF-01-11

很多事情当它行政的身份不好做的时候，他就变成个体工作的协会，出了问题它就会说那个不是行政的做法，是民间组织作的，它（政府）就脱得了干系马。中国大部分的民非实际上是这样的。但是我们这样是没有主管单位，我们脱离了它那种形式的话，那么我们应该怎么做，其实严格上来讲，我们就不应该跟他们拿一样的证，但是就是拿的是一样的证，但是实质上我们是不一样的。

Appendix 8.17

NGOLF-01-12

我们要做的工作不是它要求我们做的，不能讲是直接配合它，但是实际上还是在配合它。这个任务不是说政府说你们要做这样，更多的还是一种自发的要做这件事情。然后就去做。(NGOLF-01)

Appendix 8.18

NGOLF-01-13

我们拿到的证是跟刚才说的那些政府的民非是一样的，上面还写了主管单位，因为它没有一个什么新的证可以发给你，而且我想国家可能对这种登记方法也没有太大的问题，只是说可能需要具体再细化一下来怎么管理，它没有一个很配套的政策…

Appendix 8.CaseNGOLF.6

(1)

NGOLF-01：它以前的政策都是针对刚才讲的那种类型的，…但是我们的情况就不一样了，我们就完全没有那种身份，我们就是自己有一个章程，自己要做这个事情，然后就自己去这样实施。

卢：就是说你认为你们已经是完全脱离了政府的工作了的是马？

NGOLF-01:它以前的政策都是针对刚才讲的那种类型的，其实那些的话就没有太多事情要做的，那就是行政机关的一个翻版，

(那些其实就是跟政府有着某种关系的，我想就像派出所的警察和联防队的关系查不多，有的事情警察不好出面，那就联防队出面了)

因为如果说在我们之前有主管单位的民非的话，虽然是民非，但是在中国是这样的，实际上他们是跟政府很强的关系的，很多政府办的民非阿就是很多人（政府里面的人）自己办的，我们了解到的就是他们就是为了账面上好作一点。这样的很多，厅局都有自己的协会阿基金会阿，这个会那个会，还有中心之类的，说是也可以说是民间（的组织），但是不管是运作阿还是人员阿都是他们自己的人，只是暂时分开的。

卢：他们会不会管你们具体的一些行动呢？

NGOLF-01：没有，具体上的没有，，

其实它（政府部门）也搞不明白，不是专门管这个的部门，它也不是太想了解。除非就是李次峰的成都民政局的民间组织管理处他可能稍微了解一点，从法律的角度上来讲，他就是管理成都的民间组织的，他们内部叫做行政审批处，有的地方又叫社工处，它主要就是做一个行政审批，还有一个讲起来就是平时的行政管理。

卢：其他根你们类似的组织也会有象这些问题吗？

NGOLF-01：如果说他是一个有主管单位的，那它就有一个向主管单位汇报的义务。但是我们没有主管单位，我们只有登记单位，它（政府）也没有提出要求，它只是登记的时候讲，如果有大型活动的时候，要向它报告，但是我们不可能有大型的活动阿，我们都是一些小规模的培训，不要太高调阿，

卢：它没有要求让你们汇报，是否就给你们自由让你们自己做的机会呢？
NGOLF-01：我们觉得，因为我们这边也有很多香港啊或者台湾社工界的一些老师会来参与我们的工作，我们也向他们了解台湾香港的情况。他们也没有说绝对不会，还是有管理，而且管理也是挺严格的，特别是资金上还是要有报表之类的。但是（现在）还没有形成一个制度就是说一个季度或者一年要交报表，就是说没有一个细则，就是它放在那里我们看着就可以来操作的这种管理我们现在还看不到的。

(2)
卢：你们现在有没有和政府和企业合作的项目呢？
彭：暂时没有。从发展角度来讲，肯定是希望连接更多的单位和团体。但是还是要有一个过程，因为对于乐夫者个交流中心来讲，它还是一个完全新的平台，它怎么发展，怎么去做，我们只是把原来的一些东西拿来继续作，但是基本的想法就是把这些有价值的东西能够让社会上更多的人来接受，然后推广马，让学校和社区来接受这样的一些做法，然后让社会各个阶层的人都觉得这些事情不是说非得要发生地震了才需要作这样的事，平时都应该有这样一个观念就是说，

Appendix 8.19

NGOLF-01-14

不是说所有的工作都是用来赚钱的，不是所有的工作都是经济效益为第一的，就是给他们这样一个概念，就是做社会服务和社会工作是有这样的不可或缺的需要的。通过我们的一些活动，让我们的一些学生阿和家长 阿都能够理解社会服务或者这种公益事业对于一个现代社会它是不可或缺的这样一个角色嘛。然后也让政府也知道，让社会上一些企业和团体阿方方面面都能够理解。我们是这样设想的，我们本身不可能作很多的事情，我们一直这么努力的去登记，也都是为了去开创这样地一个。后来的就很容易了。我觉得第二家，第三家就很快（注册）了，因为有我们这个先例了。其实也不能说之前就没有，只是之前的都没有做民非登记，但是也不能说之前没有登记的就是没有做好的，只是说之前的很多登记的都是找的别的途径，

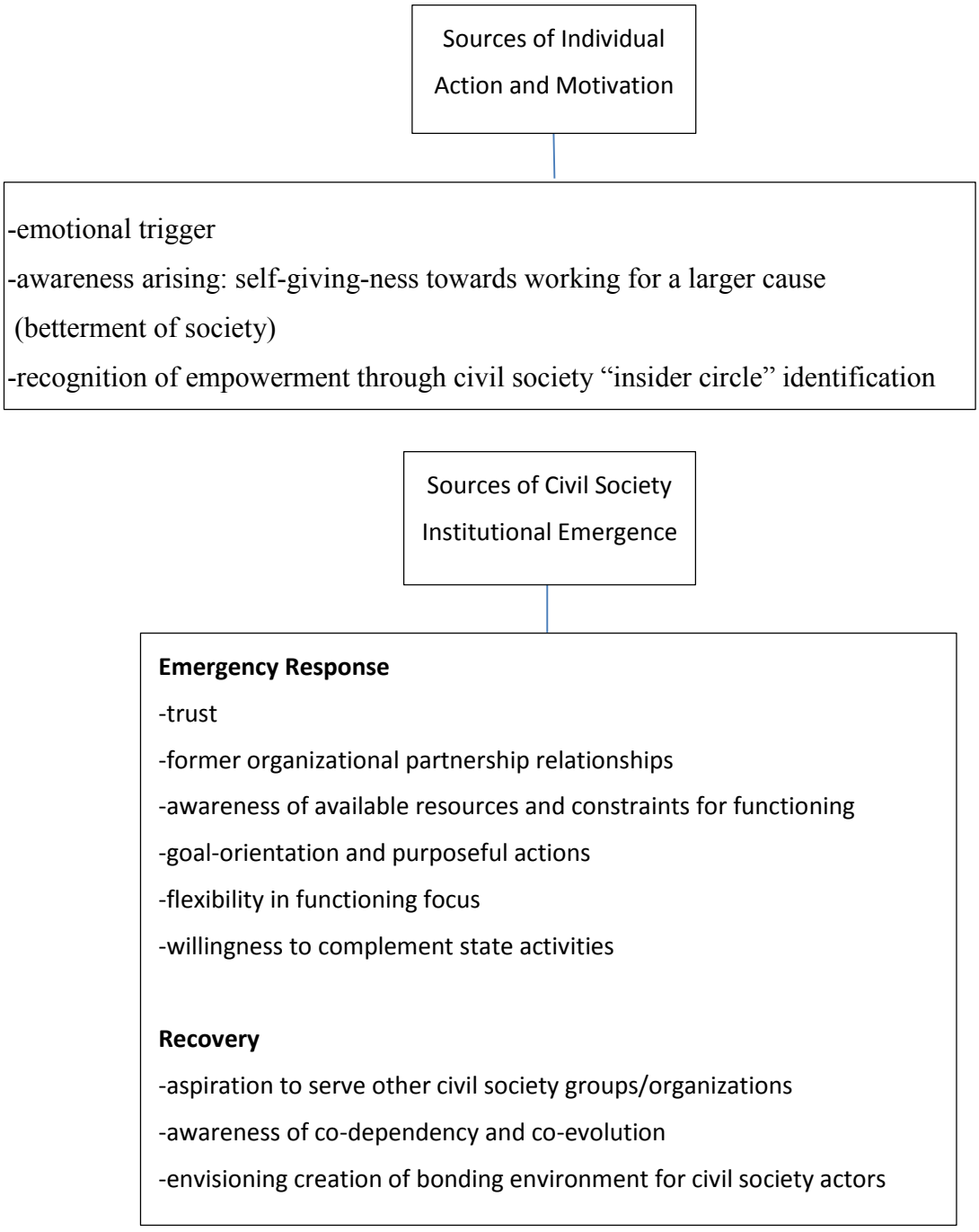
大部分就是去做工商登记，办一个公司，这样的也非常多，包括我们在申请乐夫的时候，我们有几个发起单位，像我们的发起单位他们大部分说是一些公司，其实他们那些公司的目的都不是说赚钱啊，在成都很多，像萤火虫她们都是做的工商登记，但实际上它们做公司的目的就是为了有一个身份，还要交税阿之类的。

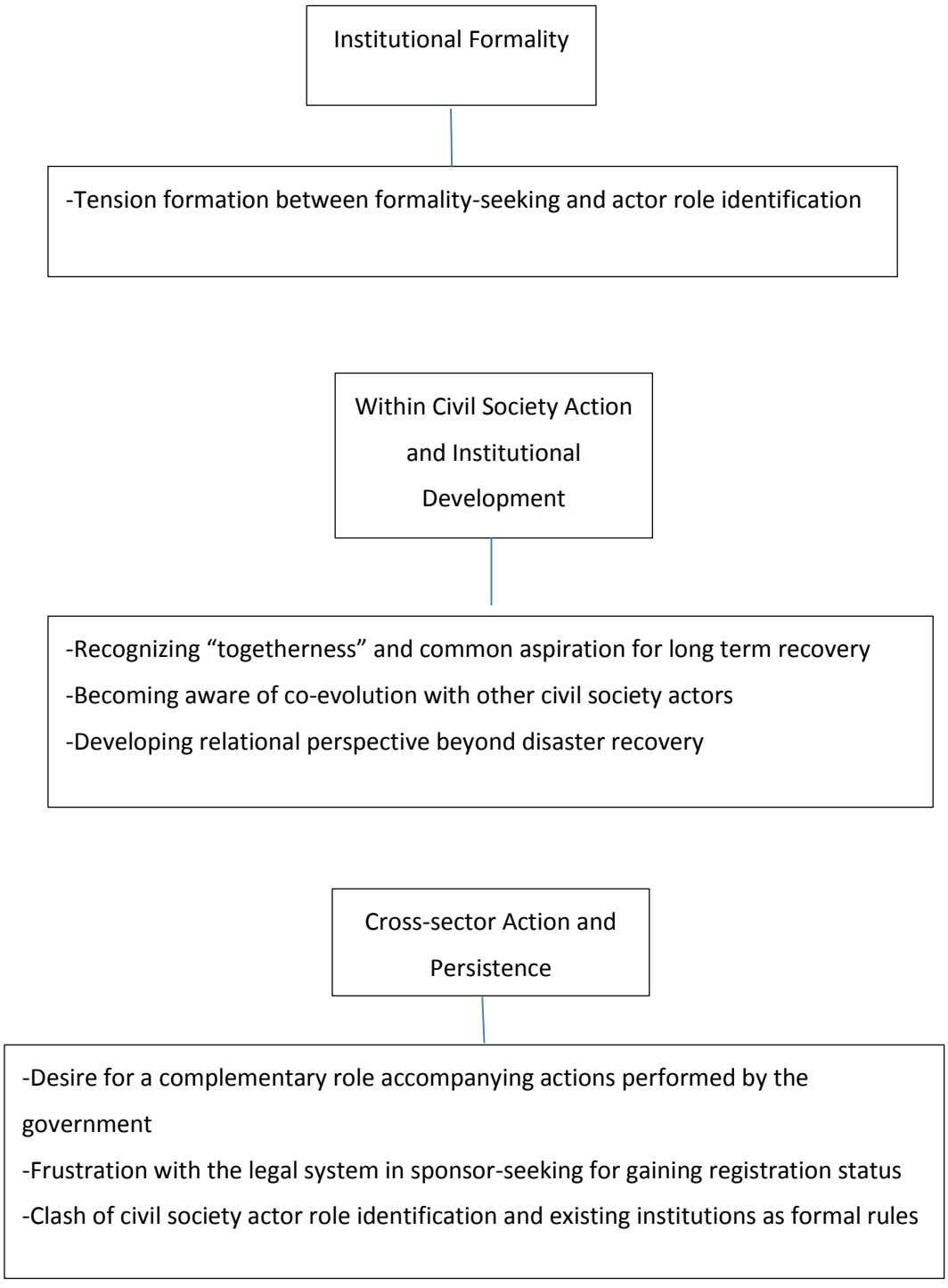
Appendix IX. Chapter 9 Appendix

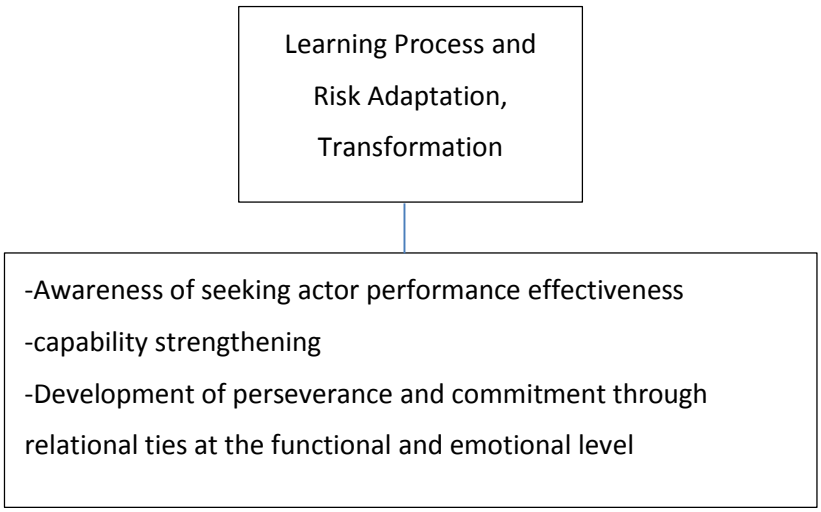
Appendix 9-1

Interpretation and Conceptual Model Development

Thematic Summary for Actor Case #3

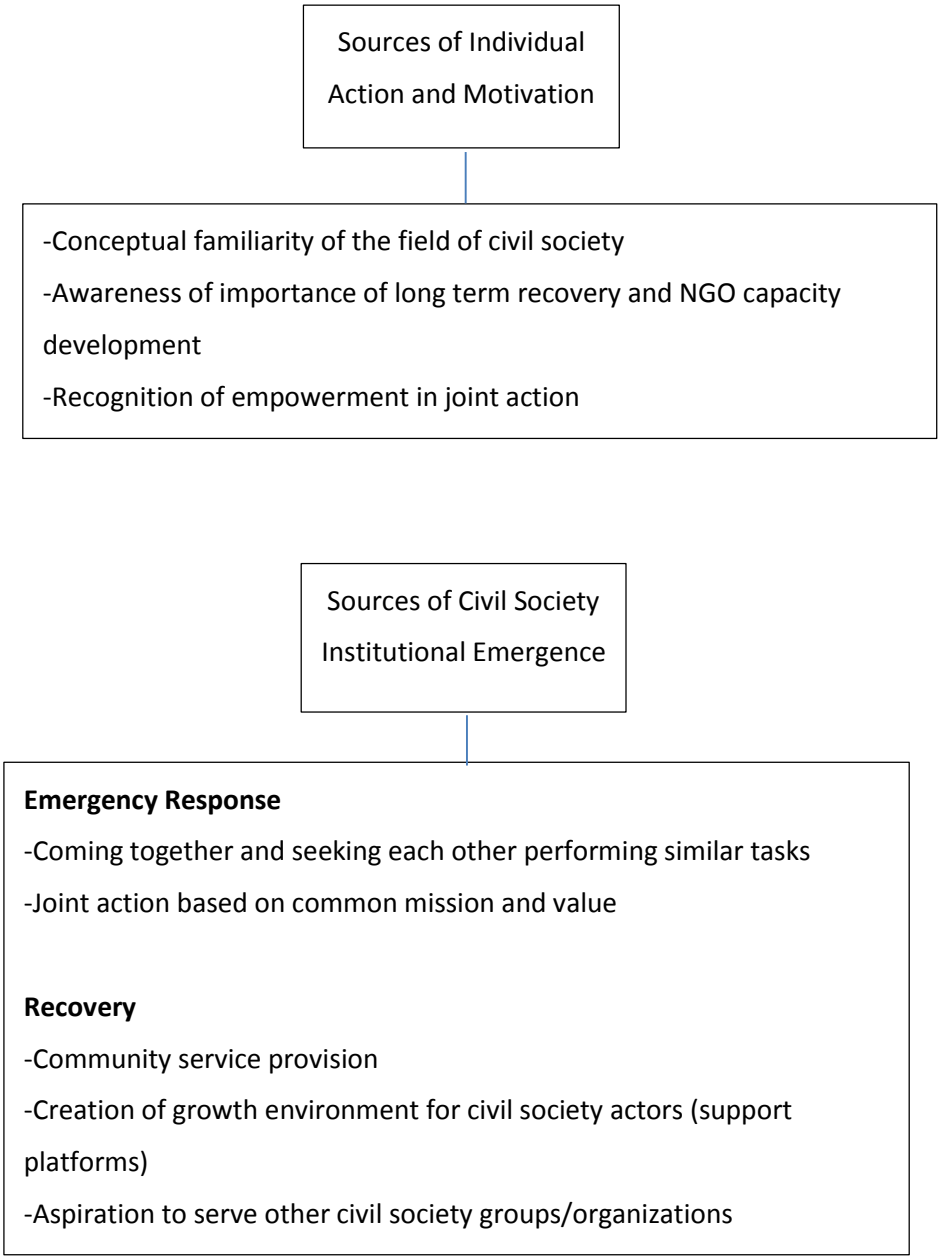


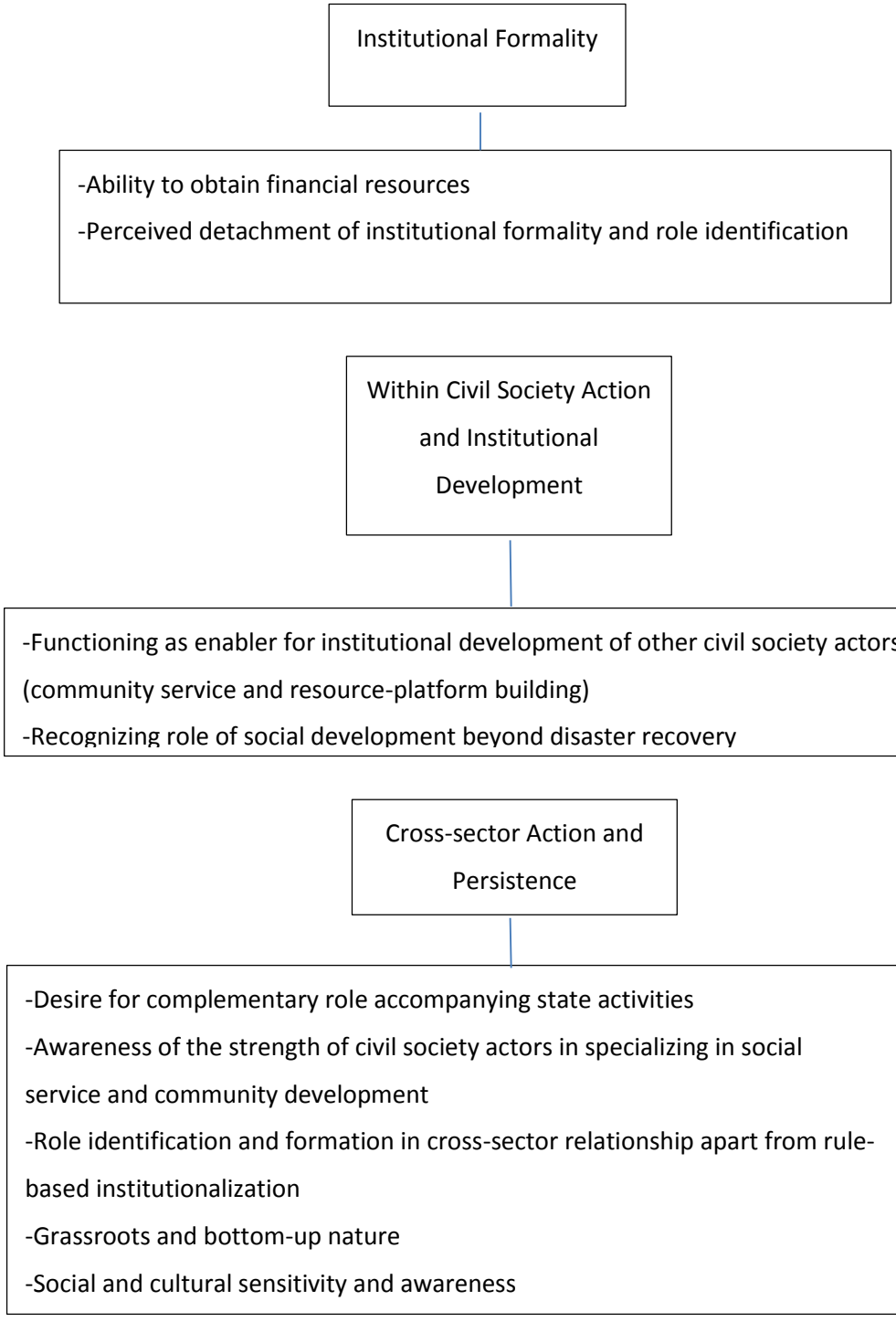

Institutional Formality
-Tension formation between formality-seeking and actor role identification
Within Civil Society Action and Institutional Development
-Recognizing “togetherness” and common aspiration for long term recovery
-Becoming aware of co-evolution with other civil society actors
-Developing relational perspective beyond disaster recovery
Cross-sector Action and Persistence
-Desire for a complementary role accompanying actions performed by the government
-Frustration with the legal system in sponsor-seeking for gaining registration status
-Clash of civil society actor role identification and existing institutions as formal rules

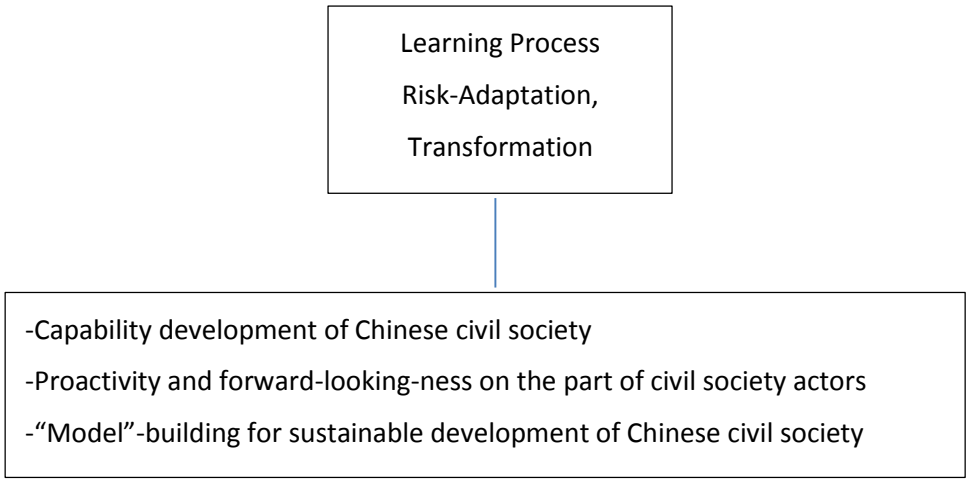

Learning Process and
Risk Adaptation,
Transformation
-Awareness of seeking actor performance effectiveness
-capability strengthening
-Development of perseverance and commitment through
relational ties at the functional and emotional level

Interpretation and Conceptual Model Development

Thematic Summary for Actor Case #49

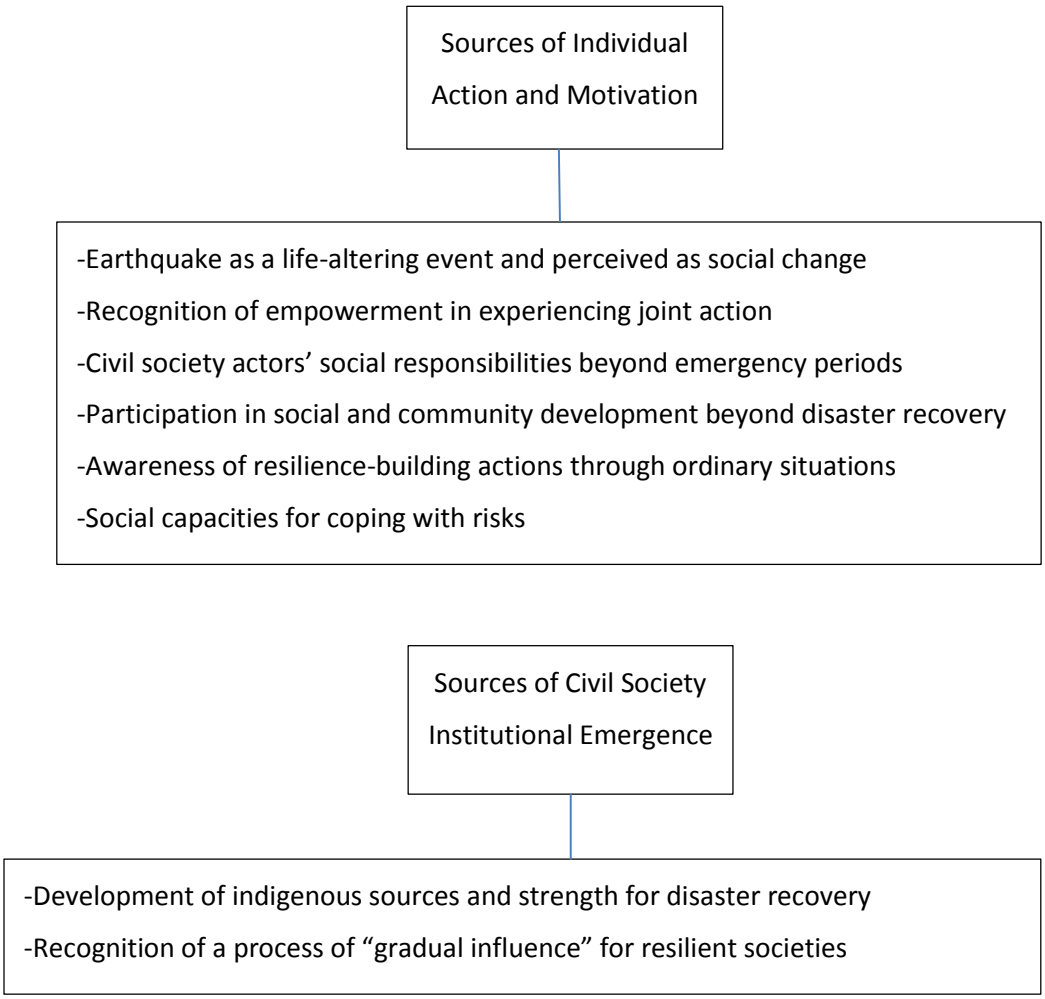



Institutional Formality
-Ability to obtain financial resources
-Perceived detachment of institutional formality and role identification
Within Civil Society Action and Institutional Development
-Functioning as enabler for institutional development of other civil society actors (community service and resource-platform building)
-Recognizing role of social development beyond disaster recovery
Cross-sector Action and Persistence
-Desire for complementary role accompanying state activities
-Awareness of the strength of civil society actors in specializing in social service and community development
-Role identification and formation in cross-sector relationship apart from rule-based institutionalization
-Grassroots and bottom-up nature
-Social and cultural sensitivity and awareness


Learning Process
Risk-Adaptation,
Transformation
-Capability development of Chinese civil society
-Proactivity and forward-looking-ness on the part of civil society actors
-“Model”-building for sustainable development of Chinese civil society

Interpretation and Conceptual Model Development

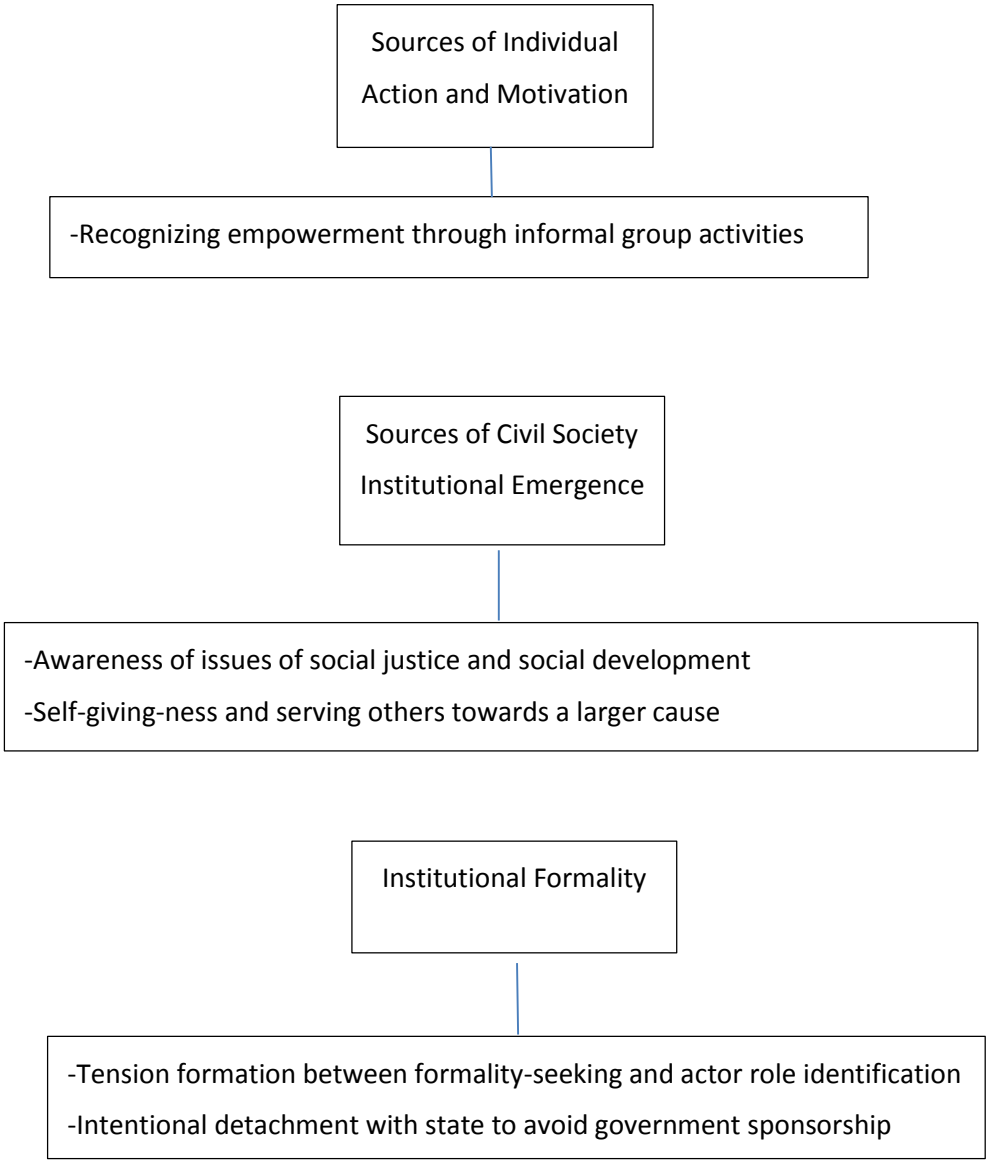
Thematic Summary for Actor Case #97

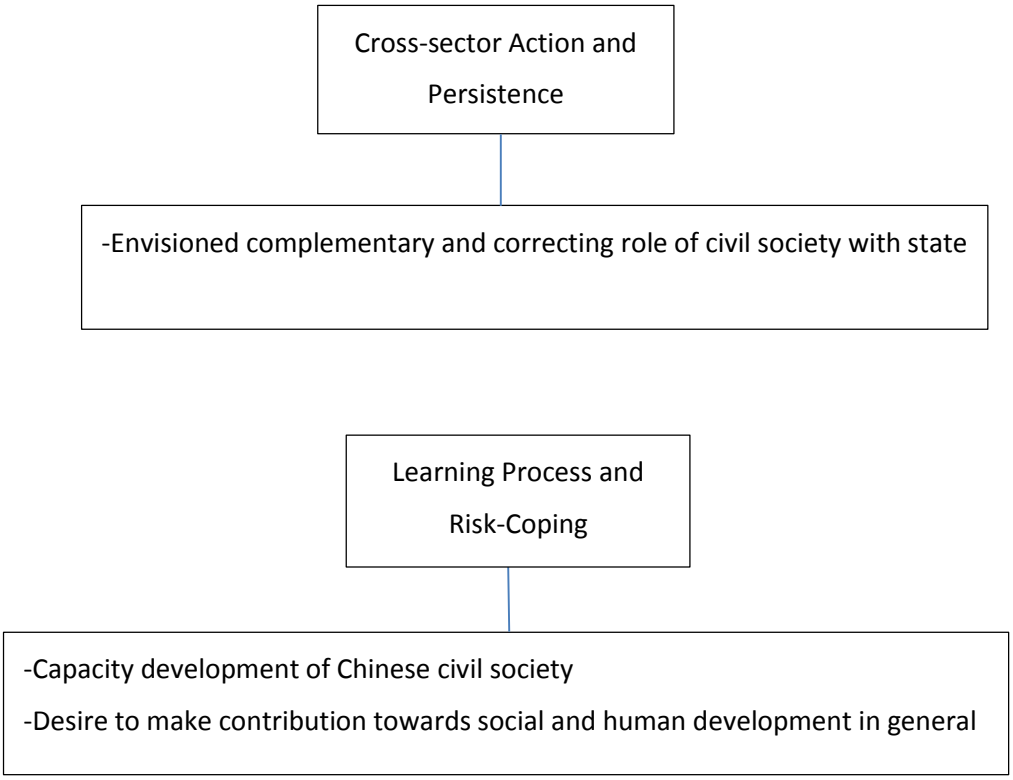



Within Civil Society Action and Institutional Development
-Becoming aware of co-evolution with other civil society actors
-Mutual interests in long term recovery at the local scale
-Recognizing civil society capacity development at the indigenous and grassroots level
Cross-sector Action and Persistence
-Complementary role of civil society actors to state actions
-The need for functioning stability and capacity development with sustained support from the state
-Proactively making contribution to social resilience
-Desire to be known and understood by the state
-Envisioning grassroots and bottom-up nature of cross-sector actions
Learning Process and Risk-Coping
-Awareness of seeking actor performance effectiveness
-Capacity development of Chinese civil society
-Desire to make contribution towards social and human development in general (community health risks)

Interpretation and Conceptual Model Development

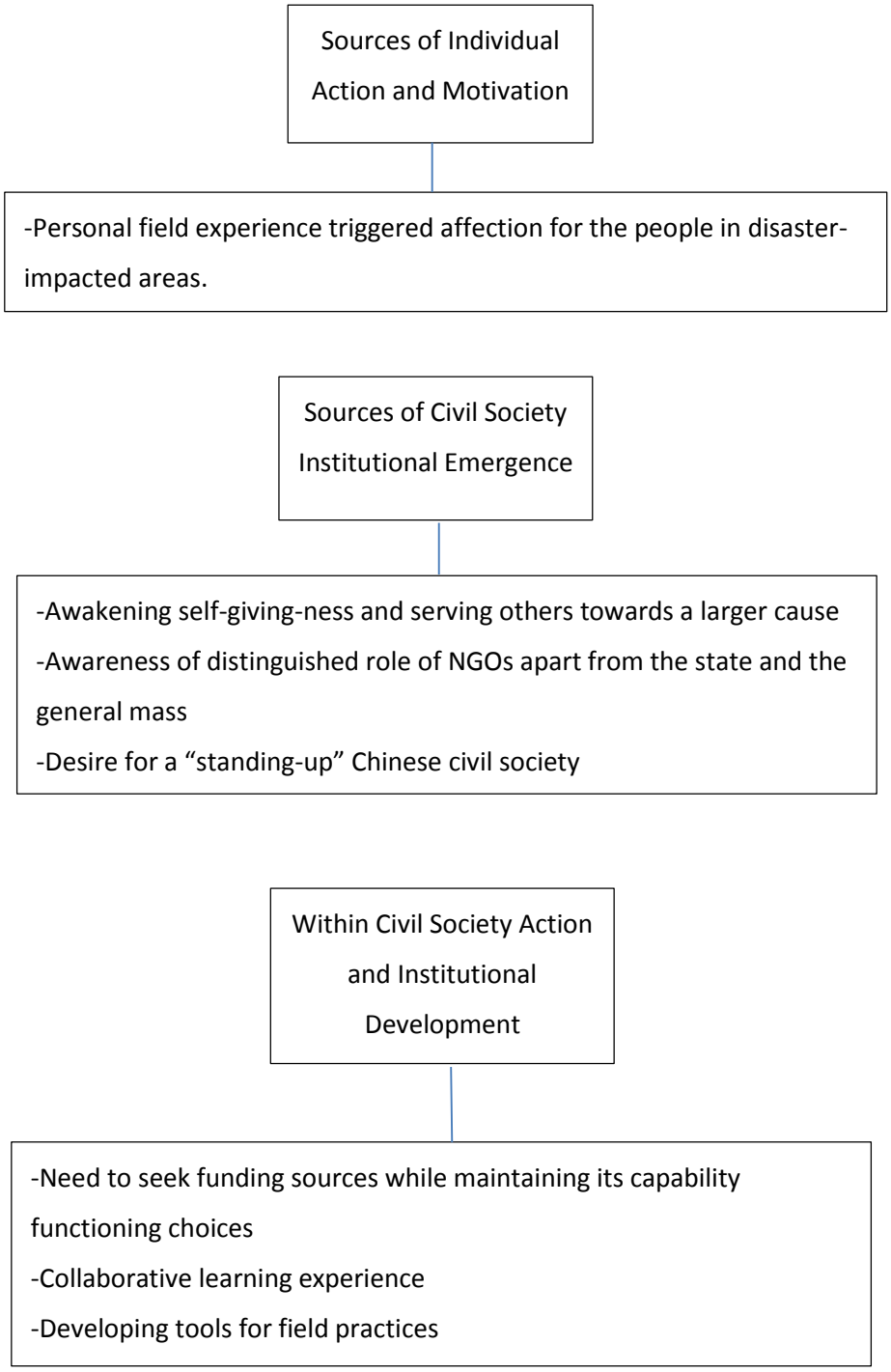
Thematic Summary for Actor Case #4

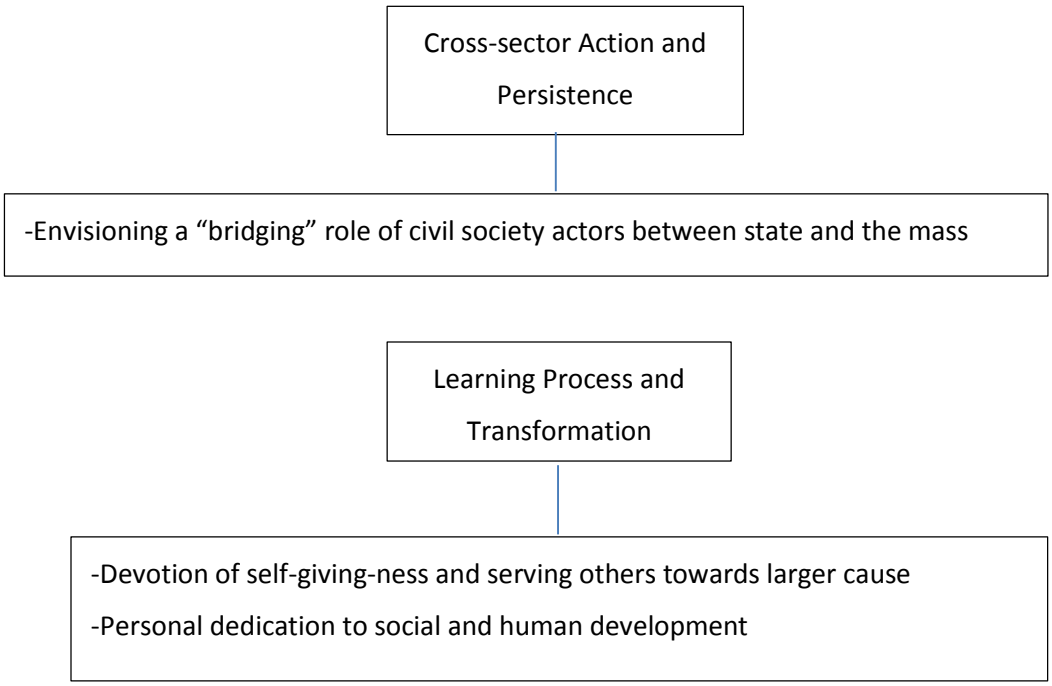



Cross-sector Action and Persistence
-Envisioned complementary and correcting role of civil society with state
Learning Process and Risk-Coping
-Capacity development of Chinese civil society
-Desire to make contribution towards social and human development in general

Interpretation and Conceptual Model Development

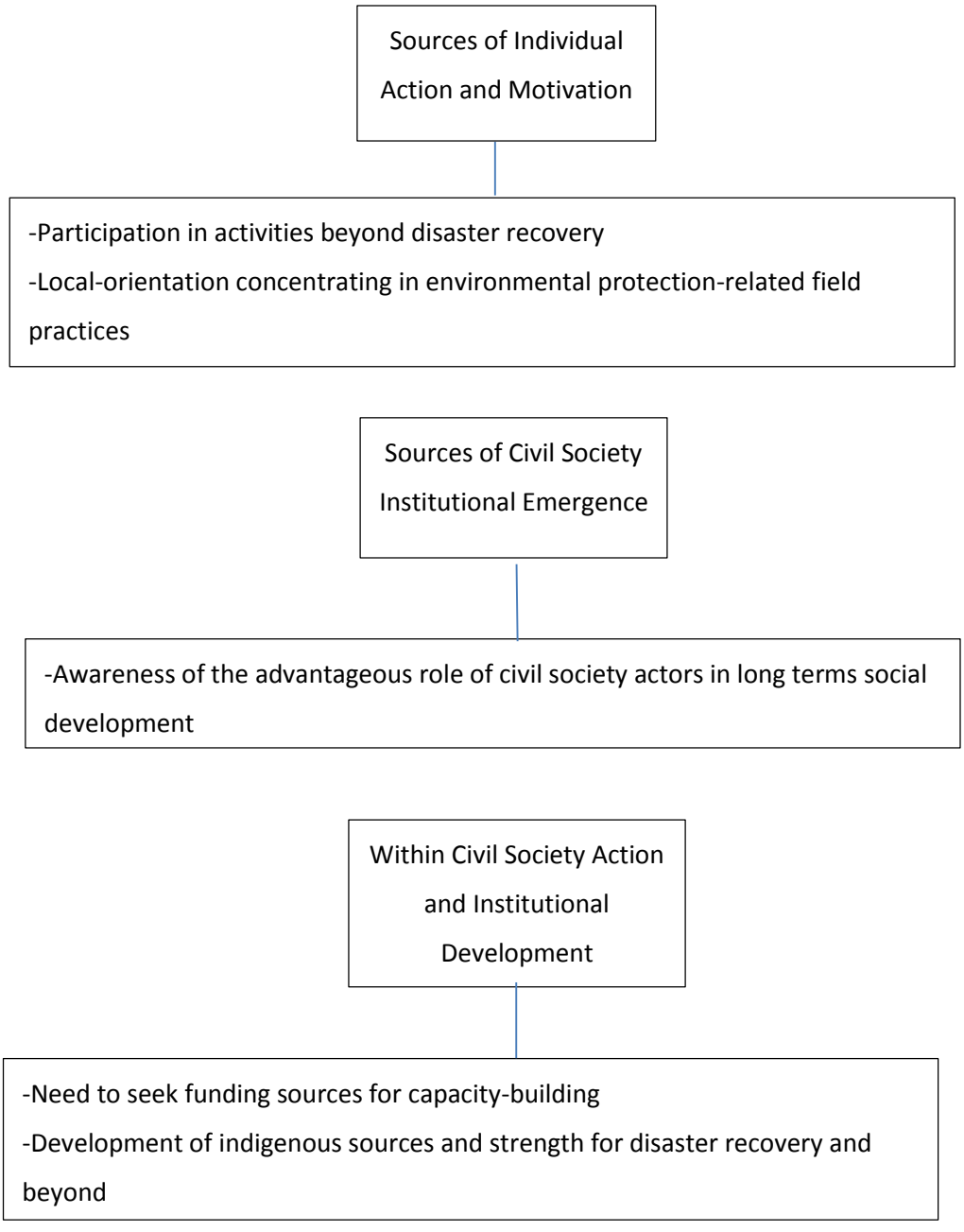
Thematic Summary for Actor Case #123

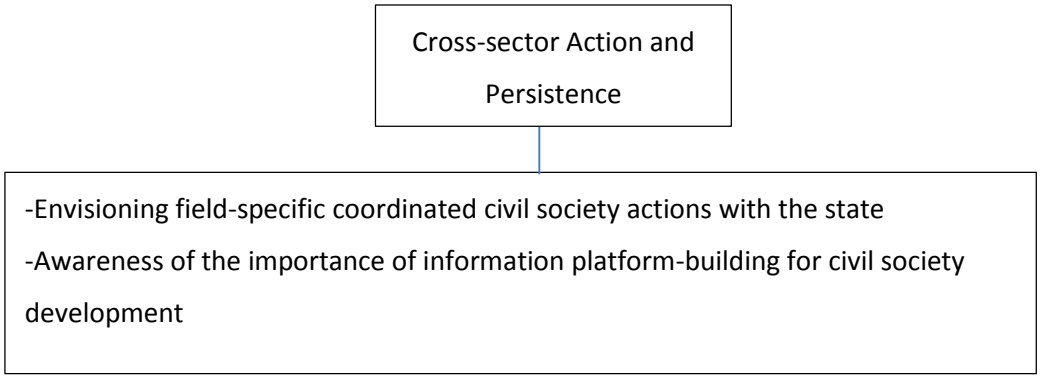



Cross-sector Action and Persistence
-Envisioning a “bridging” role of civil society actors between state and the mass
Learning Process and Transformation
-Devotion of self-giving-ness and serving others towards larger cause
-Personal dedication to social and human development

Interpretation and Conceptual Model Development

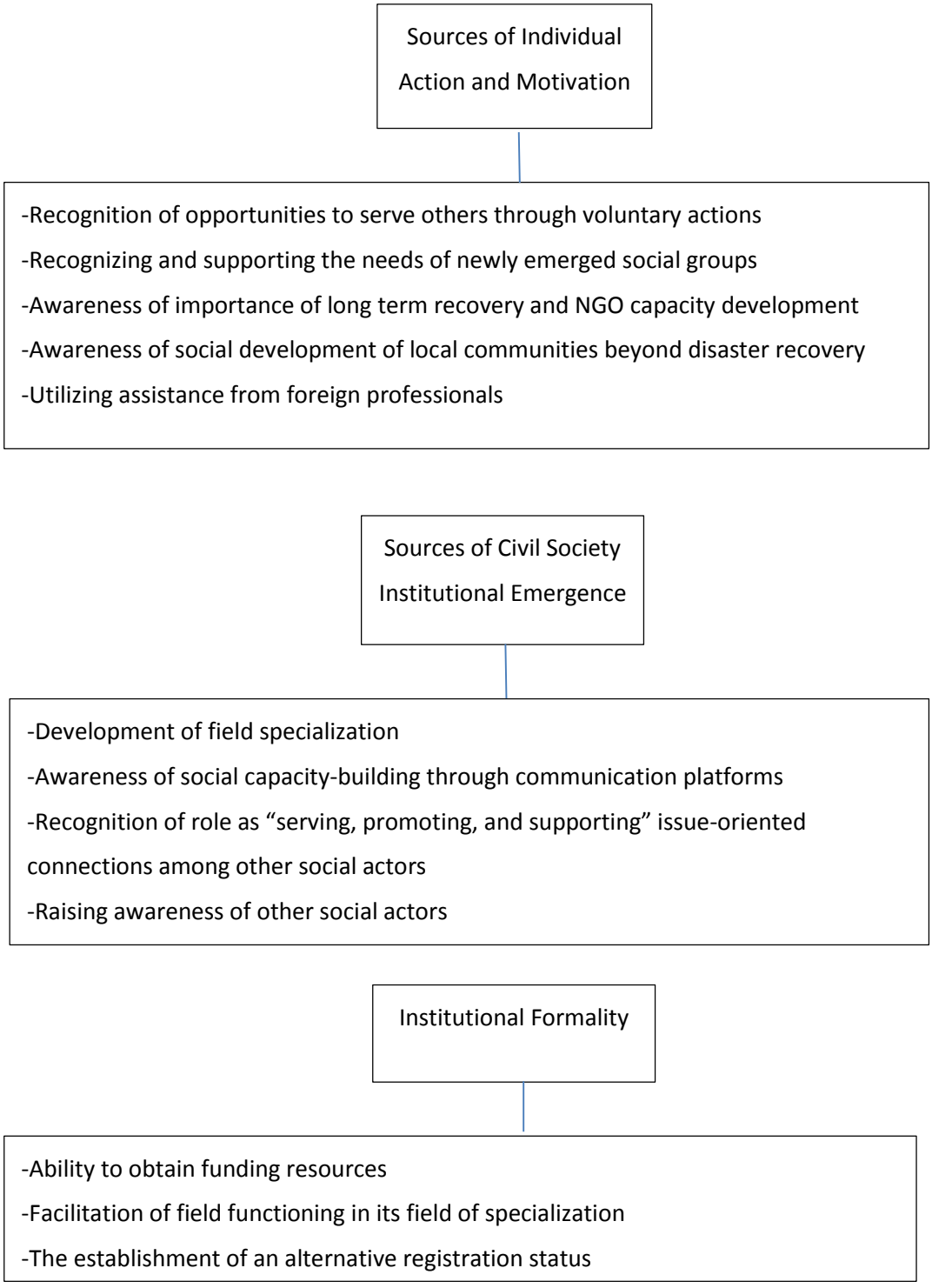
Thematic Summary for Actor Case #24

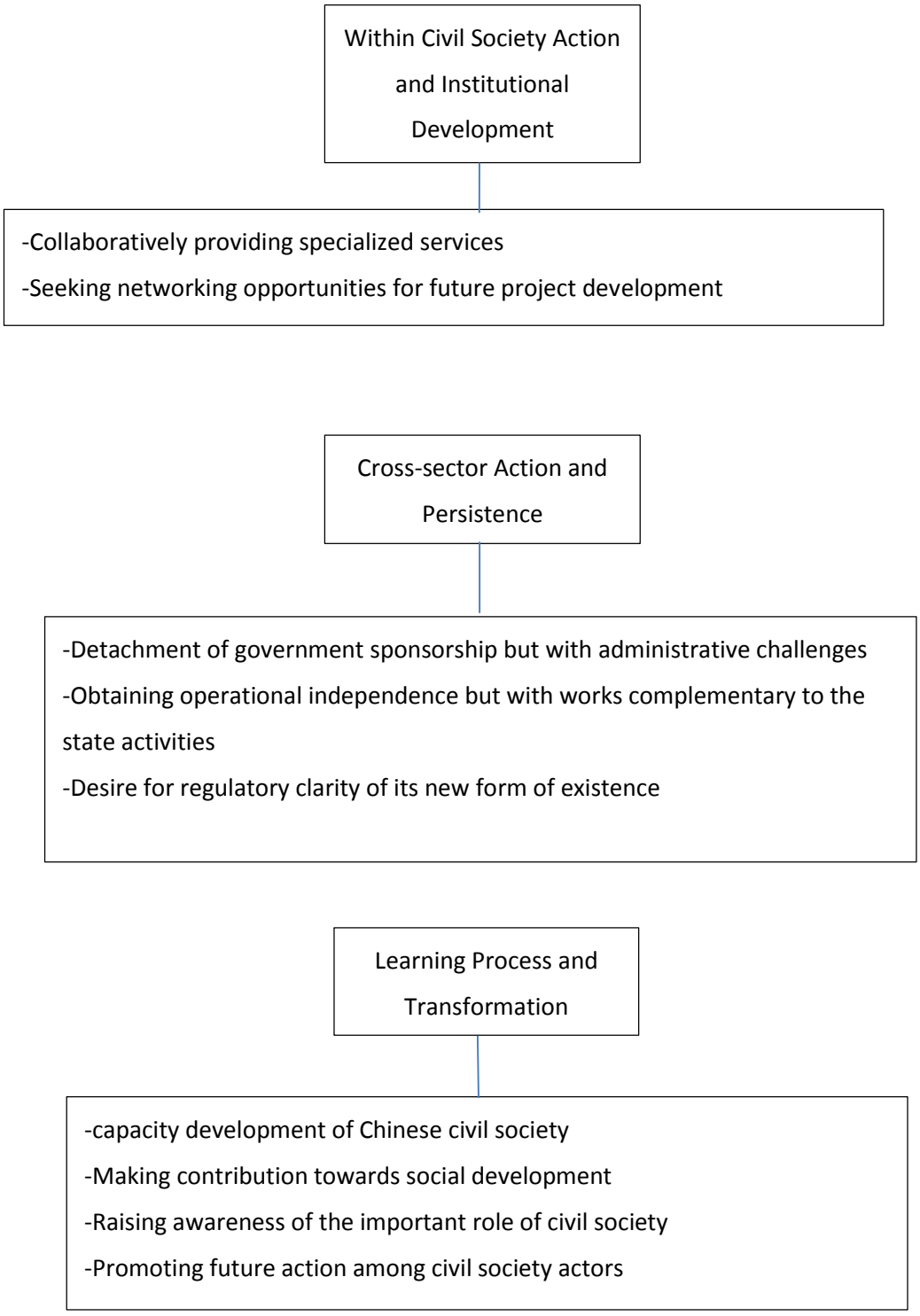



Cross-sector Action and Persistence
-Envisioning field-specific coordinated civil society actions with the state
-Awareness of the importance of information platform-building for civil society development

Interpretation and Conceptual Model Development

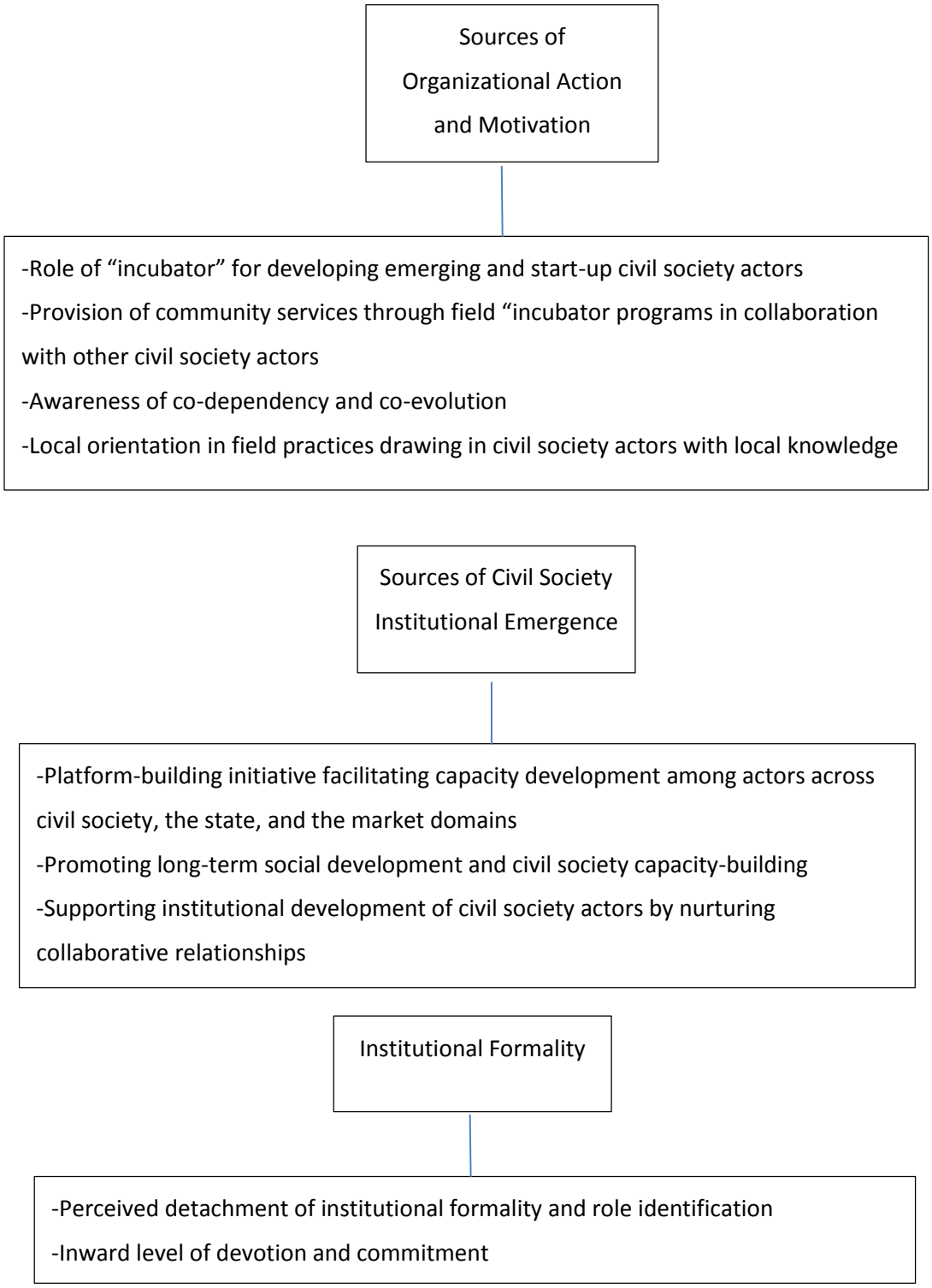
Thematic Summary for Actor Case NGOLF

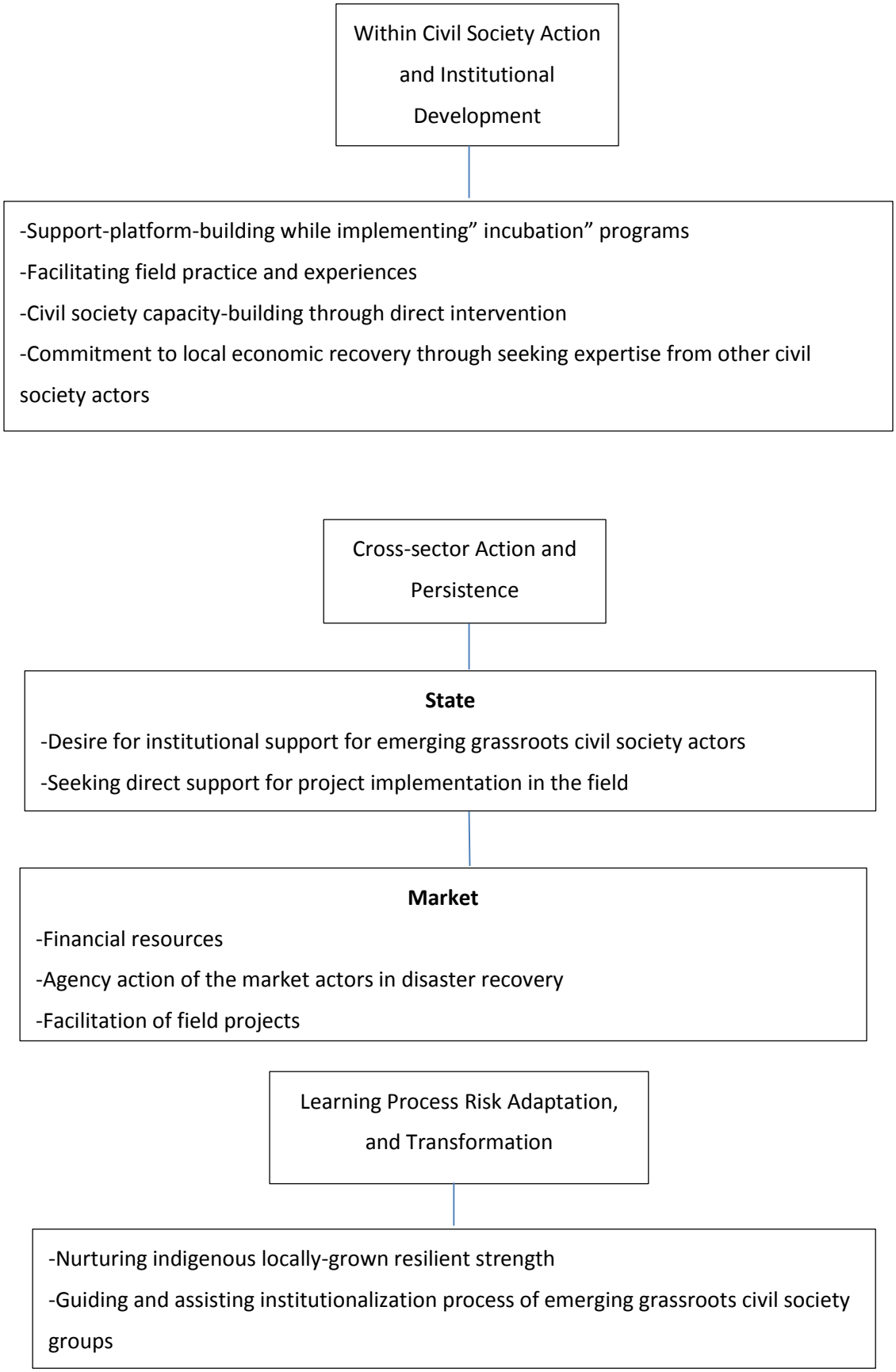



Within Civil Society Action and Institutional Development
-Collaboratively providing specialized services
-Seeking networking opportunities for future project development
Cross-sector Action and Persistence
-Detachment of government sponsorship but with administrative challenges
-Obtaining operational independence but with works complementary to the state activities
-Desire for regulatory clarity of its new form of existence
Learning Process and Transformation
-capacity development of Chinese civil society
-Making contribution towards social development
-Raising awareness of the important role of civil society
-Promoting future action among civil society actors

Interpretation and Conceptual Model Development

Thematic Summary for Actor Case #51




Within Civil Society Action and Institutional Development
-Support-platform-building while implementing" incubation" programs
-Facilitating field practice and experiences
-Civil society capacity-building through direct intervention
-Commitment to local economic recovery through seeking expertise from other civil society actors
Cross-sector Action and Persistence
State
-Desire for institutional support for emerging grassroots civil society actors
-Seeking direct support for project implementation in the field
Market
-Financial resources
-Agency action of the market actors in disaster recovery
-Facilitation of field projects
Learning Process Risk Adaptation, and Transformation
-Nurturing indigenous locally-grown resilient strength
-Guiding and assisting institutionalization process of emerging grassroots civil society groups

Appendix 9.1*A*

Civil Society Perception and Action towards State and Market

Table 9.1*A*.1. Inter-sector relationships (Communication Network-t1)

	Internal	External	Total	E-I
State	8.000	3.000	11.000	-0.455
Market	3.000	2.000	5.000	-0.200

Table 9.1*A*.2. Inter-sector relationships (Communication Network-t2)

	Internal	External	Total	E-I
State	21.000	11.000	31.000	-0.313
Market	16.000	6.000	22.000	-0.455

Table 9.1*A*.3. Inter-sector relationships (Communication Network-t3)

	Internal	External	Total	E-I
State	22.000	9.000	31.000	-0.419
Market	13.000	6.000	19.000	-0.368

Table 9.1*A*.4. Inter-sector relationships (Collaboration Network-t1)

	Internal	External	Total	E-I
State	6.000	4.000	10.000	-0.200
Market	4.000	2.000	6.000	-0.333

Table 9.1*A*.5. Inter-sector relationships (Collaboration Network-t2)

	Internal	External	Total	E-I
State	16.000	8.000	24.000	-0.333
Market	9.000	5.000	14.000	-0.286

Table 9.1*A*.6. Inter-sector relationships (Collaboration Network-t3)

	Internal	External	Total	E-I
State	18.000	8.000	26.000	-0.385
Market	8.000	6.000	14.000	-0.143

Appendix 9.2

Along with the examinations of structural evolution, I also looked at whether the types of activities the actors engaged had an effect on how they communicate and form collaboration ties. These activities are: housing reconstruction, elders and disabled, women and children, environmental protection and sustainability, psychological counseling, livelihood, and others (including those participated in community development affairs). Although the activity engagement in general was not statistically significant across networks, there are a variety of specific types that did have an impact on network dynamics. For example, it has generally been difficult for actors who focus on livelihood to initiate communication ties as compared to those who focus on other areas of activities. This makes sense because these are the more formally established areas of services during long term recovery period. The activity of livelihood encompasses a broad range of involvement and is a relatively new area of work for civil society actors, especially after the earthquake. The term "livelihood" itself already implies a long term commitment to the assisted communities. As part of my qualitative studies show (not presented here), this will not only need personal dedication of those who are working for the organizations' recovery program, long term participation inside the local communities to understand their concerns, ties with actors in the state domain and the private business domain will all be important in this endeavor.

Appendix 9.2*A*

Table 9.2*A*.1. Clustering of Communication (Motivational Network)

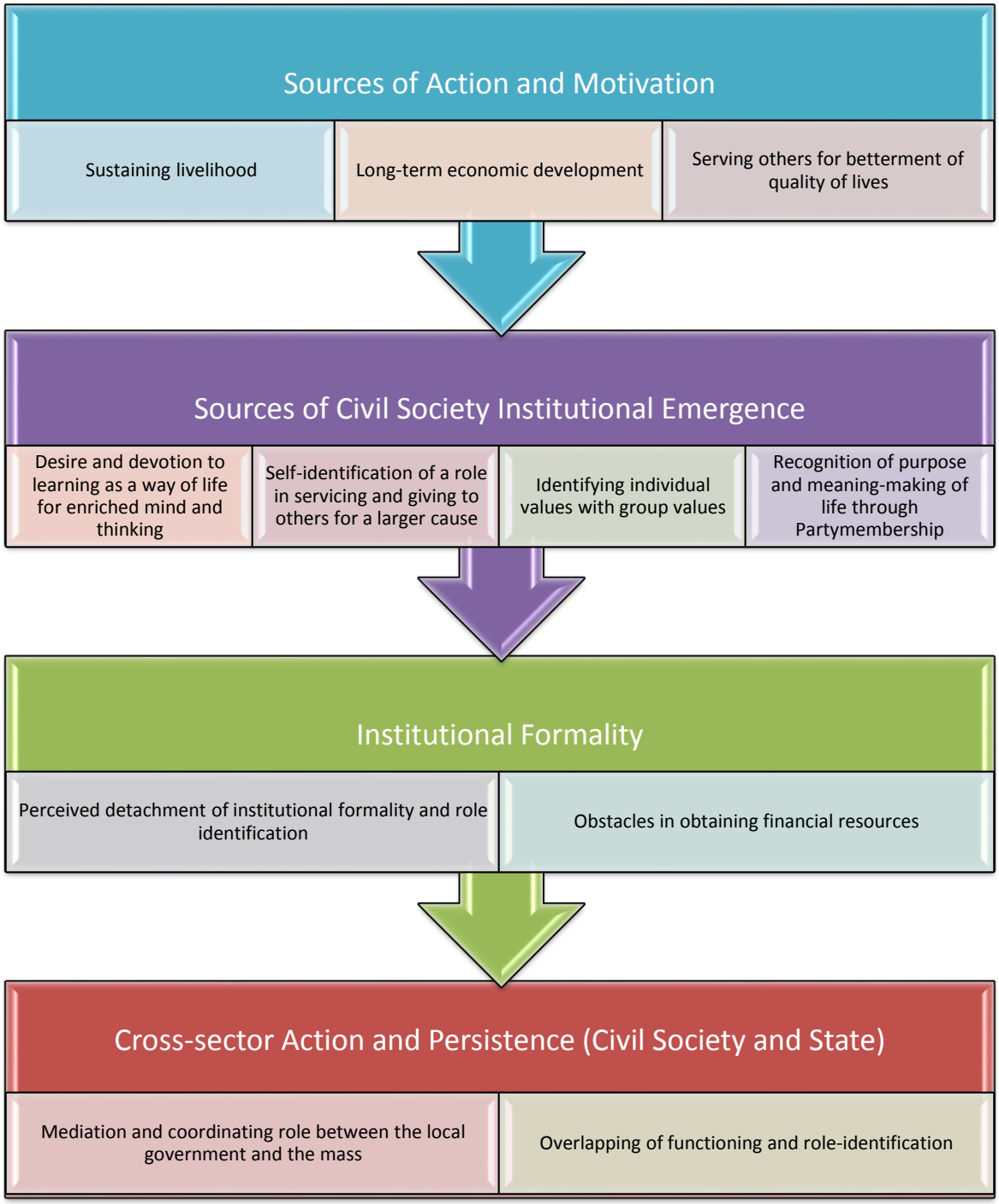
	Overall graph clustering coefficient	Weighted overall graph clustering coefficient	Overall Density
t1	0.341	0.129	0.0122
t2	0.455	0.139	0.0544
t3	0.496	0.167	0.0631

Table 9.2*A*.2. Clustering of Collaboration (Commitment Behavior Network)

	Overall graph clustering coefficient	Weighted overall graph clustering coefficient	Overall Density
t1	0.114	0.066	0.0040
t2	0.236	0.084	0.0127
t3	0.223	0.101	0.0164

Appendix 9.3

Civil Society in Wenchuan Earthquake Recovery-Community Level



Appendix 9.4

Actor-oriented Institutional Formation of Civil Society Domain

With civil society actors gradually occupied different role positions within the corresponding communication and collaboration network environments, their moves toward establishing formal institutional status marked the starting point of an institutionalization process after the earthquake. Before the 2008 disaster event, the regulatory environment in China allowed for two main types of registration status as the sources of legitimacy for civil society organizations. The first type of formal institutional status requires organizational actors to abide by what is called the "hierarchical registration and dual supervision" (Yu 2011, 80). This means that civil society actors not only have to find the registering departments at the appropriate level under the ministry of civil affairs, they also need to find local government branches that are willing to be a "mother-in-law" (82) in overseeing their daily activities. The findings in this study revealed that some emerging civil society actors encountered great difficulties in gaining registration through this route. As actors started to perform activities to provide services for other civil society organizations through the earthquake recovery stage, the existing regulations did not recognize this kind of emerging functions. This resulted in the local regulatory body's lack of know-how and willingness to handle and oversee this type of functioning of civil society actors. Furthermore, a registered status gained through the dual supervision process was widely perceived to be a potential obstacle for the independent functioning among newly emerged civil society groups. To become "intimately-related" and "affiliated" to the government, or sometimes referred to as government-organized NGOs (GONGOs) (Yu 2008) was being refrained from as part of the civil society actors' intentions to make independent decisions. Another way for these actors to gain institutional formality status before the earthquake was through registering as a private business enterprise. However, this "masked" existence of the real nature of a civil society organization created confusion when they carry out their works in the field. Initial trust between the civil society actor and the mass that it intended to serve has been difficult to create from the start.

A third route to gain formal institutional status emerged as an alternative way for non-registered civil society actors to gain legal status after the 2008 earthquake. The evidence was revealed from the experiences of actor NGOLF. It was then possible to gain registration status without finding the supervisory body to oversee its activities at the local level. On the one hand, this type of institutional existence created possible room for

independent decision-making on the part of the civil society actor. On the other hand, this form of existence also generated certain degree of lacking in clarity on issues of responsibilities and duties that needed to be performed on the government side as well as on the NGO side.

The emergence of the non-registered civil society groups and the creation of a new type of registration status that did not require government sponsorship marked the promising changes in institutional environment brought about by the actions inside civil society domain. At the same time, the development trajectories of these actors brought forth the challenges that the current Chinese administrative regulations and the legal system face in providing an enabling environment for the long-term social development after the disaster.

Despite of these difficulties, civil society groups and organizations were able to work collaboratively in carrying out recovery-related programs to empower disaster-impacted local communities so as to enable them to resolve their own issues and care for their own community members. Figure 7.4 illustrated a community building model implemented by a collaboration initiative between a civil society actor and a state-affiliated social service organization at the local level. The joint management of a community center provided opportunities for members of the community to learn to self-organize and cope with stressful situations, thus enhancing its capacity to develop resilience to buffer against future public health issues such as disasters or other mass traumatic events. In this home-grown model of social resilience-building, one actor focused as being the propeller for building cohesion through activities promoting collective identification, sense of belonging, as well as trust among people living inside the community. The other actor focused on building the self-management capacity of the community, which in turn will enable the process of building up overall solidarity among members.