

**Natural Disasters and Community Resilience:
The Case of El Morro, Chile**

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Abstract

The purpose of this study is to analyse the impact of the 2010 Chile earthquake and tsunami on community resilience. Specifically, the thesis examines the role of community resilience in coping with and recovery from natural disasters, and the capacities and external factors that enhance or undermine the levels of community resilience. Furthermore, this study focuses on developing a model suitable for analysing community resilience in the context of natural disasters in Chile.

In 2010, a magnitude 8.8 earthquake and tsunami struck Chile. Coastal areas were particularly affected by the disaster; fishing villages were completely destroyed and many people were injured and killed by the tsunami. However, exceptionally, only one fishing village entirely survived the tsunami impact in Talcahuano, one of the worst affected regions by the disaster. This is the case of the 'El Morro' community where, despite their boats and houses being swept away by the destructive waves, no one died. This community, considered the most successful experience in coping effectively with the disaster in the country, is the case analysed in this thesis.

The results of a primary research conducted in the 'El Morro' case study (through methods of semi-structured interviews, observation, informal conversations, documentary review and social media) show that communities have the power to activate internal resources and capacities to cope with and recover from natural disasters. The research highlights that communities are not simply passive victims of disasters; rather, they are active agents. Furthermore, it shows that external factors, specifically political ones can have a detrimental effect on community resilience. Additionally, an integrated model of community resilience was developed which provides new insights into measuring community resilience in the context of natural disasters. Finally, these findings could be useful for designing effective disaster risk reduction programmes and promoting community resilience in Chile and in other developing countries.

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CHAPTER 1

INTRODUCTION

The main research question guiding my study is: What is the impact of the 2010 Chile earthquake and tsunami on community resilience? To further investigate the main question, I set the following purpose and aims. The main purpose of my research is to analyse the role of community resilience in coping with and recovering from natural disasters in the Chilean context. My thesis has three aims:

- To analyse the resilience capacities that contribute to coping with and recovering from natural disasters in the Chilean context.
- To examine the external factors that enhance or undermine community resilience in the Chilean context.
- To develop a model suitable for analysing community resilience in the context of natural disasters in Chile.

Natural disasters have increased globally in severity and frequency during the past two decades. According to The Centre for Research on the Epidemiology of Disasters (CRED), between 1994 and 2013, EM-DAT recorded 6,873 disasters worldwide, which claimed 1.35 million lives. Earthquakes (including tsunamis) killed more people than all the other types of disaster put together, which caused the death of 750,000 people in the same period (CRED, 2015). Some of the most significant earthquakes in recent years include the 2004 Indian Ocean earthquake and tsunami, the 2008 Sichuan earthquake, the 2010 Haiti earthquake, the 2010 Chile earthquake and tsunami, the 2011 Japan earthquake and tsunami, and the 2015 Nepal earthquake. Scientists anticipate that natural disasters are going to be much more common in the coming decades and the scale of disasters will continue to increase.

The focus of my research is on the 2010 Chile earthquake and tsunami. Chile is one of the high-risk earthquake countries in the world. At the end of 2015, The National Oceanic and Atmospheric Administration (NOAA) registered 186

significant earthquakes in the 495-years history of the country (NOAA, 2015). In the last century, one earthquake struck every 7.1 years, a frequency much higher than in Japan, California, Mexico or other seismic areas (Bernal, 1992). Furthermore, the history of the country includes the largest earthquake ever recorded in the world, rating 9.5 M_w . This disaster, known as the great 1960 Chile earthquake, occurred in Valdivia, southern Chile and led to a big Tsunami in which waves rose to the unprecedented elevation of 30m. at some coastal locations (Castaños and Lomnitz, 2012, pp.15-16).

The 2010 Chile earthquake and tsunami is considered the sixth largest recorded in the history of humanity and it is the most powerful quake to hit Chile after the great 1960 earthquake. The 2010 disaster occurred on Saturday, 27 February 2010, at 03:34 am. local time. The epicentre was located off the coast of Maule Province in south-central Chile, having a magnitude 8.8 M_w (Castaños and Lomnitz, 2012). It impacted Chile from Valparaíso to Araucanía region; this is equivalent to more than 630 kilometres of the length of the national territory, which is home to 75% of the Chilean population. The earthquake triggered a series of tsunami waves that devastated many coastal areas of the country. Over 500 people were killed in the disaster (Morales Muñoz, 2010).

The long history of disasters in Chile could give the impression that the country is well prepared to respond to disasters. Nevertheless, the 2010 earthquake and tsunami showed that this was not the case. The earthquake revealed serious deficiencies in the national emergency warning system. The Chilean Navy made a mistake by not immediately issuing a tsunami warning after the earthquake. The tsunami risk was dismissed by Chilean authorities causing the death of many people in coastal villages. The country was in chaos. The disaster caused power outages for several days. Telecommunications, transport, water and sewerage were inoperative. The vague information provided by political authorities left people in a state of profound uncertainty. Furthermore, the roads were destroyed and the telephone service was not working so people could not visit or contact their relatives to find if they had survived the disaster or not. Additionally, the fear of food and water scarcity increased exponentially. As a result, the lack of information and the central government's slow emergency response led to

looting and breakdown in civic order in the first 24 hours after the disaster (EERI, 2010, p.17).

Nevertheless, in the midst of the chaos, collective actions emerged spontaneously in communities and people were able to survive and cope with the disaster. The most common strategies were rescuing neighbours, running community kitchens and implementing community security guards. The activation of community capacities such as participation, solidarity, cooperation and social capital was evident in the hours following the disaster. This phenomenon has not only been observed in Chile but also in other disasters around the world. Community responses to Hurricane Katrina (USA) demonstrated the importance of local knowledge, resources, and cooperative strategies in determining their survival and recovery (Patterson et al., 2010, p.137). In Australia and New Zealand, Ross and Carter (2011, p.2) have observed the spontaneous activation of social capital bonds within and between social groups or sectors during natural disasters. In the case of 1995 Kobe earthquake in Japan, neighbours were the ones who saved most of the victims. One of the main remarkable activities carried out by the Kobe community was extinguishing fires, rescuing and evacuation operations, followed by the establishment of a community kitchen and the provision of night guards (Nakagawa and Shaw, 2004). These examples of community responses after major disasters illustrate the potential of communities to mobilise internal resources and capacities to deal with and recover from disasters. This fact underpins my first objective: To analyse the resilience capacities that contribute to coping with and recovering from natural disasters in the Chilean context.

In order to address my research question, I decided to use a community resilience framework. The concept of resilience became popular among scholars with the Hyogo Framework for Action (HFA) 2005-2015 which emphasises the need and the ways to build resilient communities. The entry of the term into disaster discourse can be seen as the birth of a new culture of disaster response (Manyena, 2006, p.434). This could be observed in a new major agreement after HFA, The Sendai Framework for Disaster Risk Reduction 2015-2030, which establishes 'investing in disaster risk reduction for resilience' as one of its priorities

(UNISDR, 2015). Therefore, resilience is a term that will probably remain relevant for a long period in the natural disaster field since the evidence shows that ‘resilient communities are far less vulnerable to hazards and disasters than less resilient places’ (Cutter et al., 2008b, p.601). Nonetheless, the growing popularity of the term has not been exempt from criticism and disagreements. The inability of scholars to agree on a single definition causes confusion and ambiguity. In my research, in Chapter 2 more precisely, I explore this issue along with other discrepancies. Furthermore, since resilience is a relatively new topic in the disaster field, the research evidence is still scarce. This situation is even worse in developing countries, where only a few studies have been conducted (Paton et al., 2008). In Latin American countries, with the exception of a few specific studies, community resilience research has not been commonly used. For this reason, my thesis aims to add new knowledge to the community resilience field in a way that becomes useful for policy makers and planners not only in Chile but also in other developing countries.

In my thesis, I understand community resilience as a *set of capacities or resources activated in communities to cope with and recover from disasters*. Therefore, capacities and resources are the core of my definition. This is a preliminary definition, however, as the final definition will be the result of the integration of my theoretical analysis and empirical evidence that I present in Chapter 9. My research will not only provide a new definition of community resilience but would also contribute to a better understanding of the nature and characteristics of resilience capacities, addressing a fundamental gap in the literature.

Another key gap in the literature is the impact of external factors on community resilience. Based on the experience of the 2010 Chile earthquake and tsunami, there were factors, essentially political ones that impacted resilience capacities. For instance, as I previously explained, the mistaken tsunami alarm, the lack of information and the slow emergency response from central government were some of the factors that negatively affected the capacity of communities to cope with the event. The cancellation of the tsunami warning caused even the death of people. Consequently, external factors play a crucial role in building resilience. In my research, I will explore the role of external factors, especially

in strengthening and weakening community resilience, as mentioned in my second research objective: To examine the external factors that enhance or undermine community resilience in the Chilean context. My thesis will show that there is a variety of external factors that affect community resilience, including social, economic, physical and political ones. These external factors can even change dramatically the internal dynamic of communities as I will discuss in my thesis. Because studies on external factors are missing, my research will contribute to filling this fundamental gap and promoting further study on this area.

My first research objective focused on resilience capacities, while the second one on the external factors that affect these capacities. My last research objective - to develop a model suitable for analysing community resilience in the context of natural disasters in Chile - addresses the dynamic aspects of community resilience. This involves the design of a model that could explain how community resilience works in the context of natural disasters, including the main interactions and components. Nevertheless, designing a model applicable to Chile will not be an easy task since there is not a model of community resilience in Chile and the evidence in other developing countries is still scarce. This will be the first model of community resilience in Chile based on the experience of the 2010 Chile earthquake and tsunami. My research will present a novel model of community resilience that will encompass new components, interactions and principles that have not been observed in other models yet. The design of my model will be the result of an effort to bring together a theoretical model of community resilience (developed in Chapter 3) with empirical data obtained from my fieldwork, leading to an integrated model of community resilience (developed in Chapter 9).

My research questions are explored using a single case study strategy, specifically an extreme case (Yin, 2003). I selected El Morro, one of the most affected communities by the 2010 disaster, as my case study. El Morro was the only fishing village that survived entirely the tsunami impact in Talcahuano city. This community remained at the top of a hill completely isolated for five days; no authorities or relief workers helped them because it was assumed, erroneously, that no one had survived. Consequently, the community had to

activate internal capacities and carried out collective strategies for surviving and coping with the event. The data was collected during six months through methods of semi-structured interviews with different research participants; observation, informal conversations, documentary review and social media. Even though the manner in which El Morro coped with the disaster is unique, the analysis of this community's reaction could also contribute to understanding the dynamic of resilience in small-scale communities, a context scarcely investigated. Furthermore, the findings about El Morro could change the way in which communities are perceived in the face of natural disasters. My research will show that people from the El Morro community were not simply passive victims of the disaster, they were active agents. Communities are valuable actors that have the power to survive and cope successfully with disasters.

My thesis is organised into 9 main chapters. In Chapter 2, I discuss community resilience within the context of natural disasters. I focus on the core definitions adopted by different disciplines, the main disagreements and the variety of existing models to measure community resilience. In Chapter 3, I develop a theoretical model of community resilience which will include the analysis of resilience capacities and external factors. In Chapter 4, I explain the research methodology that I used to test this model in El Morro case study, including the process of data collection, the research methods and analysis. In Chapter 5, I introduce the general context of the 2010 Chile earthquake and tsunami which will provide a better understanding of the situation experienced by El Morro at the different stages of the disaster. In the same chapter, I also contextualise the pre-disaster period in El Morro which provides a benchmark to understand the changes on community resilience after the disaster. In Chapters 6, 7 and 8, I present the findings of my research; each chapter addresses one stage of the disaster. In Chapter 6, I examine the immediate emergency period; in Chapter 7, the winter emergency period; and in Chapter 8, the reconstruction period. In Chapter 9, I combine the theoretical model and the empirical evidence from El Morro in order to design an integrated model of community resilience. This integrated model includes the analysis of resilience capacities and external factors. Chapter 10 represents my conclusion where I clarify the main argument of my thesis as well as the contributions of my research. In addition, I critically

examine the main limitations of my thesis and provide directions for future research.

CHAPTER 2

COMMUNITY RESILIENCE AND NATURAL DISASTERS

Introduction

The purpose of my thesis is to analyse the role of community resilience in coping with and recovering from natural disasters in the Chilean context. In order to achieve this aim, in this chapter I, first of all, clarify community resilience within the context of natural disasters. This is the first step in addressing my first research objective: to analyse the capacities that contribute to coping with and recovering from natural disasters in the Chilean context.

In the first section of this chapter, I examine the historical evolution of the concept of resilience in different research fields, and I identify both the core definitions adopted by different disciplines and the main problems in the use of the concept. Furthermore, I provide a general definition of resilience. In the second section, I introduce the concept of community resilience itself and the disagreements associated with the use of this term. At the beginning of the second section, I discuss the term ‘community’, which provides a conceptual background to understand community resilience. In the third section, I will pay particular attention to the use of the concept in the area of natural disasters; I briefly discuss the various definitions of resilience in this context as well as the main criticism surrounding the usage of this concept in disaster field. I also present some general capacities of resilient communities.

In the fourth section, I engage with the measurement problems of community resilience. I analyse the variety of models and frameworks for measuring community resilience in the disaster field. In the fifth section, I propose a measurement system based on capacities. I provide a definition of community resilience in disaster context and address the issues that emerge when focusing on capacities, the terminology used and the level of analysis. In this section, I also analyse the variety of capacities observed in the literature in order to provide an overview of the different ways in which resilience is understood in the disaster

field. Finally, I examine the positive and negative implications of having a broad range of capacities.

2.1. Resilience: A multidisciplinary concept

The term ‘resilience’ originates from the Latin word *resilio*, which means ‘to jump back’ (Klein et al., 2003, p.35). There are conflicting explanations about the field in which the word ‘resilience’ was originally used (Boon et al., 2012, p.384; Manyena, 2006, p.433). Some scholars point to physics (Van der Leeuw and Leygonie, 2000, p.9) and ecology (Cutter et al., 2008b; Lopez-Marrero and Tschakert, 2011; Zhou et al., 2010), while others indicate psychology (Johnson and Wiechelt, 2004; Tusaie and Dyer, 2004; Waller, 2001) and physiology (Tusaie and Dyer, 2004). However, the most widely accepted explanation suggests that the word ‘resilience’ originates in two disciplines. The first one is ecology, with Holling’s work (1973), in which resilience was used to describe the ability of an ecosystem to absorb and adapt to change while maintaining its existing state of functioning (Boon et al., 2012, p.384). The second one is psychology with the studies focusing on psychopathology in children ‘at risk’ carried out by Emmy Werner, Norman Garmezy and Ruth Smith (1982).

Defining the term resilience is not an easy task. Over the last three decades, numerous definitions have been provided by scholars belonging to a variety of disciplines, including physics, mathematics, engineering, ecology, psychology, psychiatry, sociology, social work, nursing, economics and business management (see table 2.1). Other recent areas include hazards, disaster reduction and emergency management (Boon et al., 2012; Cutter et al., 2008b; Klein et al., 2003; Zhou et al., 2010), a field that I discuss in the next section. But the definitions are still so broad that no single definition is unanimously accepted. Depending on the field, resilience has specific connotations, which most probably represents the source of the misunderstanding surrounding this concept. After analysing the definitions of resilience used in different fields, I identified a common pattern. Firstly, resilience is generally understood as ‘the capacity or ability to cope with and recover positively from stress or disturbance’. Consequently, I propose that disagreements around the use of the

term could be solved by focusing on the core of the definition; which is the capacities. Secondly, a positive outcome is emphasised by most of the definitions. I will, however, challenge this perspective in the following chapters.

Table 2.1 summarises the main definitions of resilience by field. As it can be observed, most definitions come from two main areas, physical sciences and social sciences. On the one hand, physical sciences include definitions used in physics, chemistry and ecology. In physics and mathematics, resilience describes the capacity of a material or system to return to equilibrium after a displacement (Norris et al., 2008, p.127). In other words, resilience in this context refers to the object's ability to resist the impact of external forces (Prosser and Peters, 2010). Similarly, in chemistry resilience is the capacity of a metal to return to its original form (Prosser and Peters, 2010, p.8). Finally, in ecology, resilience describes the capacity of a system to tolerate adversity and return to its original state.

On the other hand, in the social sciences, resilience has been used extensively in psychology, social work and sociology. In psychology, individuals who do experience disruption from stress but then use personal strengths to grow stronger and function above the norm are considered resilient. Therefore, resilience in this context focuses upon positive outcomes, not on illness (Tusaie and Dyer, 2004, p.4). In social work, the focus is on the strengths and capacities of clients, rather than on their problems (Saleebey, 2000). In sociology, resilience is the ability of social units, such as communities or cities, to withstand external shocks to their infrastructure (Magsino et al., 2009, p.23). Apart from physical and social sciences, there are other fields which have also adopted the concept of resilience, including health, business management and engineering. In health, resilience has been used to describe immunity to sickness (Prosser and Peters, 2010, p.8). In business management, resilience is defined as the capacity to use disruptive events to slingshot an organisation forward (Parsons, 2010, p.18). In engineering, resilience refers to the capacity of a material to absorb energy in the elastic range. It is measured by the ratio of recovered energy to applied energy (Aguilera and Stanley, 1999, p.144)

It is clear that the popularity of resilience across a number of fields is growing. However, along with the growing popularity of the concept, disagreements among scholars have also increased. These discrepancies not only involved the definition and meaning of resilience but other issues. Specifically, there are some divergences about the use of resilience as either an outcome or a process (Cutter et al., 2008b, p.600; Kaplan, 1999, p.113; Winkworth et al., 2009, p.5). Moreover, resilience can be investigated at different levels: individual, community, organisation or ecosystem (Boon et al., 2012, p.385), which brings more confusion than clarity about the meaning of the term and consequent analyses. These divergences prevented for researchers from reaching a comprehensive, single and all-encompassing definition of resilience. Nevertheless, although it is practically impossible to agree on a universal definition of resilience because most of the social sciences concepts lack a precise definition, it is still possible to clarify the meaning of the concept by paying attention to the capacities which, as I explained above, are the common aspect found in most of the definitions. Focusing on capacities could bring more flexibility to the usage of the concept in different fields, which can provide new insights into the nature of resilience. Consequently, this could also promote interdisciplinary cooperation; an opportunity for exploring the usage of this term, motivating the creativity of researchers, inspiring more studies; and thereby contributing to the theoretical progress in this area.

Table 2.1. Definitions of resilience

Author, year	Discipline	Definition
Holling (1973)	Ecology	The persistence of relationships within a system; a measure of the ability of systems to absorb changes of state variables, driving variables, and parameters, and still persist.
Gordon (1978)	Physics	The ability to store strain energy and deflect elastically under a load without breaking or being deformed.
Pimm (1984)	Ecology	The speed with which a system returns to its original state following a perturbation.
Wildavsky (1988)	Ecology	The capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back.
Masten et al. (1990)	Psychology	The process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances.
Egeland et al. (1993)	Psychology	The capacity for successful adaptation, positive functioning, or competence despite high-risk status, chronic stress, or following prolonged or severe trauma.
Rutter (1993)	Psychology	Resilience is a combination of abilities and characteristics that interact dynamically to allow an individual to bounce back, cope successfully, and function above the norm in spite of significant stress or adversity.
Holling et al. (1995)	Ecology	It is the buffer capacity or the ability of a system to absorb perturbation or the magnitude of disturbance that can be absorbed before a system changes its structure by changing the variables.
Gordon (1995)	Ecology	Resilience is the ability to thrive, mature and increase competence in the face of adverse circumstances. These circumstances may include biological abnormalities or environmental obstacles. The adverse circumstances may be chronic and consistent or severe and infrequent.
Horne and Orr (1998)	Ecology	Resilience is a fundamental quality of individuals, groups and organisations, and systems as a whole to respond productively to significant change that disrupts the expected pattern of events without engaging in an extended period of regressive behaviour.
Mallak (1998)	Ecology	Resilience is the ability of an individual or organisation to expeditiously design and implements positive adaptive behaviours matched to the immediate situation while enduring minimal stress.
Aguilera and Stanley (1999)	Engineering	Resilience refers to the capacity of a material to absorb energy in the elastic range. It is measured by the ratio of energy recovered to energy applied
Comfort (1999)	Ecology	The capacity to adapt existing resources and skills to new systems and operating conditions.
Platteau (2000)	Sociology	Resilience is used to describe the capacity of groups to cope with stresses from changes in their environment.
Paton et al. (2000)	Psychology	Resilience describes an active process of self-righting, learned resourcefulness and growth—the ability to function psychologically at a level far greater than expected given the individual’s capabilities and previous experiences.
Carpenter et al. (2001)	Ecology	Ecosystem resilience is the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. A resilient ecosystem can withstand shocks and rebuild itself when necessary. Resilience in social systems has the added capacity of humans to anticipate and plan for the future.

Table 2.1. Definitions of Resilience (continued)

Author, year	Discipline	Definition
Kendra and Wachtendorf (2003)	Psychology	The ability to respond to singular or unique events.
Klein et al. (2003)	Ecology	The ability of a system that has undergone stress to recover and return to its original state; more precisely (i) the amount of disturbance a system can absorb and still remain within the same state or domain of attraction and (ii) the degree to which the system is capable of self-organization.
Cardona (2003)	Ecology	The capacity of the damaged ecosystem or community to absorb negative impacts and recover from these.
Pelling (2003)	Ecology	The ability of an actor to cope with or adapt to hazard stress.
Bodin and Wiman (2004)	Ecology	The speed with which a system returns to equilibrium after displacement, irrespective of how many oscillations are required.
Longstaff (2005)	Ecology	The ability by an individual, group or organization to continue its existence (or remain more or less stable) in the face of some sort of surprise. Resilience is found in systems that are highly adaptable (not locked into specific strategies) and has diverse resources.
Kang et al. (2007)	Ecology	Resilience is the ability of the system to recover once hazard has occurred and measure resilience by the duration of an unsatisfactory condition.
Butler et al. (2007)	Psychology	Good adaptation to extenuating circumstances; a recovery trajectory that returns to baseline functioning following a challenge.
Norris et al. (2008)	Psychology	A process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance.
Cutter et al. (2008b)	Geography	Resilience is defined as a system's capacity to absorb disturbance and re-organise into a fully functioning system.
McAslan (2009)	Engineering	Resilience is a measure of a material's capacity to withstand impact, as well as to absorb and release energy through elasticity.
Prosser and Peters (2010)	Physics	It describes objects that are invulnerable to the impact of external forces.
Prosser and Peters (2010)	Chemistry	It is the capacity of a metal to return to its original form.
Prosser and Peters (2010)	Health	Resilience can be used to describe immunity to sickness.
Parsons (2010)	Business Management	The capacity to use disruptive events to slingshot an organisation forward.
Resilience Alliance (2012)	Ecology	The ability to absorb disturbances, to be changed and then to reorganise and still have the same identity (retain the same basic structure and ways of functioning). It includes the ability to learn from the disturbance.

2.2. The concept of resilience at community level

As I explained in the previous section, one of the disagreements in the use of the term ‘resilience’ is related to the level of analysis. There are six general levels of resilience, ranging from small to large: individual, community, city, social, ecological system and physical (Norris et al., 2008, p.129). Each of these levels is worthy of a specific study. However, the focus of my research is on the community level. Before examining the concept of community resilience, it is important to clarify how I understand a community.

‘Community’ is one of the most widely used and misused words in social science (Hatton, 2015, p.378). Although the debate about the definition of community is beyond the scope of my research, it is necessary to clarify how I understand a community because this has affected the theoretical and methodological decisions I made regarding my thesis. In general, a community can be understood in geographical and sociological terms. In geographical terms, a community can be defined simply as those who live in a similar region (Boon et al., 2012, p. 383). This geographical perspective emphasises the tangible aspects of communities, the physical borders and territorial factors. Nevertheless, communities are not restricted only to geographical boundaries; they can extend beyond these limits, such as professional or religious communities. This leads to a sociological understanding of community in which intangible factors play a crucial role. From this point of view, communities are those who relate to each other as a community (Boon et al., 2012, p.383) and share specific characteristics such as supporting or shaping the development of individual and collective identities, facilitating connections and interactions with others; and generating predictable encounters (Lowndes and Sullivan, 2008, p.56). Finally, depending on the geographical or sociological perspectives, communities can be perceived as physical or social entities.

In order to understand a community in the context of natural disasters, I suggest that both perspectives, geographical and sociological, are necessary. On the one hand, geographical boundaries are important; the risk of specific natural hazards varies widely depending on the location of communities. For instance, fishing

communities are more prone to tsunamis than rural communities. Likewise, communities located in areas of unstable terrain are more prone to landslides than those located in stable terrain. Therefore, geographical and territorial factors matter when it comes to addressing communities in natural disaster contexts. The size of the community is also an important factor; most models of resilience are orientated to city level and only a few of them on small-scale communities. In Chile, it was observed that emergency city planning did not work in the emergency periods since people were not aware of its existence. The collective action took place in small-scale communities that allowed the survival of people. Based on this evidence, my thesis focuses on the micro-level, using the El Morro community as case study. When defining small-scale communities, I use the definition of Kearns and Parkinson (2001, p. 2103). They refer to this micro level as the smallest unit of neighbourhood or 'home area' which is an area of 5-10 minutes' walk from one's home.

On the other hand, in the context of natural disasters, the sociological perspective is useful to understand the dynamic aspects of communities, the interactions amongst members and the intangible components that emerge in the face of disasters, including values, cooperation or sense of community. As I proposed that capacities are the core of community resilience, I also suggest that communities could also be defined by the capacities and resources that communities share. Interests and identity attributes also play a crucial role when it comes to defining communities. Communities can be conceptualised as 'socially defined spatial organisations with fluid and contested boundaries in and through which individuals come together with like-minded people to realise specific goals in ways that transcend time and space' (Dominelli, 2002, pp. 128-129)

Both the geographical and sociological approaches are useful to understand a community in the context of natural disasters. In my study, I will adopt the definition of community provided by Boon et al. (2012, p.383) because it gathers both the geographical and sociological aspects of communities. They define community in three different ways: those who live in a similar region; those who relate to each other as a community; and those who come together in response to an issue such as disaster. The last understanding of community is also relevant

to my research because natural disasters destroy homes and can displace entire communities. Consequently, many times people are forced to live in crowded temporary shelters that became ‘improvised communities’. Although they lost their territory, people still come together to live in new communities.

The resilience analysed at a community level is called ‘community resilience’. This concept is now frequently used in many fields such as psychology, social ecology, public health, community economic development (CED), sociology (Cox and Perry, 2011) and more recently, the concept is the focus of geographical research on natural hazards (Harte et al., 2009; Tobin, 1999). In contrast to individual resilience, community resilience is defined more loosely (Kulig, 2000). This term has been defined and characterised in a variety of ways (see table 2.2). In general, community resilience has essentially the same meaning as the concept of resilience itself. Nevertheless, it has distinctive features that are important to mention. The first one is the notion of improvement, which refers to the ability of a social entity to improve its resources and perform better after the disaster (Aguirre, 2006; Landau, 2007). The concept of community resilience emphasises even more the positive outlook from which the idea of resilience is generally conceived, as I explained in the previous section. Furthermore, the focus on inherent strengths and resources is a significant component of community resilience (Ahmed, 2004; Coles, 2004; Ganor et al., 2003; Landau, 2007; Norris, 2008; Paton, 2006), which is also in line with my main argument of resilience as a capacity. The second essential characteristic is the collective action which is seen as an important part of the recovery process after a crisis (COAG, 2009; Coles and Buckle, 2004; Pfefferbaum et al., 2005).

Table 2.2. Definitions of community resilience

Author, year	Definition
Timmerman (1981)	Resilience is the ability of human communities to withstand external shocks or perturbations to their infrastructure and to recover from such perturbations.
Brown and Kulig (1996)	The ability to recover from or adjust easily to misfortune or sustained life stress.
Sonn and Fisher (1998)	The process through which mediating structures (schools, peer groups, family) and activity settings moderate the impact of oppressive systems.
Adger (2000)	The ability of communities to withstand external shocks to their social infrastructure.
Ganor and Ben-Lavy (2003)	The ability of individuals and communities to deal with a state of continuous, long term stress; the ability to find unknown inner strengths and resources in order to cope effectively; the measure of adaptation and flexibility.
Godschalk (2003)	A sustainable network of physical systems and human communities, capable of managing extreme events; during a disaster, both must be able to survive and function under extreme stress.
Ahmed et al. (2004)	The development of material, physical, socio-political, socio-cultural, and psychological resources that promote the safety of residents and buffer adversity.
Kimhi and Shamai (2004)	Individuals' sense of the ability of their own community to deal successfully with the ongoing political violence.
Coles and Buckle (2004)	A community's capacities, skills, and knowledge that allow it to participate fully in recovery from disasters.
Pfefferbaum et al. (2005)	The ability of community members to take meaningful, deliberate, collective action to remedy the impact of a problem, including the ability to interpret the environment, intervene and move on.
Berke and Campanella (2006)	Resiliency applies to the process of recovery planning in which all affected stake holders—rather than just a powerful few—have a voice in how their community is to be rebuilt.
Aguirre (2006)	A resilient social entity absorbs, responds and recovers from the shock; and improvises and innovates in response to disturbances.
Landau (2007)	The community's inherent capacity, hope, and faith to withstand major trauma, overcome adversity, and to prevail, with increased resources, competence, and connectedness.
Maguire and Hagan (2007)	Social resilience is the capacity of a social entity (e.g., a group or community) to bounce back or respond positively to adversity.
Colten et al., (2008)	What sets resilience in human communities apart from biotic communities is the capacity to learn from past experiences and employ strategies to contend with future events.
COAG (2009)	A disaster resilient community is one that works together to understand and manage the risks that it confronts but is also aware of the responsibility of all levels of government.

2.3. Resilience in the context of natural disasters

After analysing resilience at the community level, my next step is to identify how this concept is understood in the natural disasters context. To this end, I will, first of all, clarify my understanding of a disaster. I will adopt the definition provided by The United Nations Office for Disaster Risk Reduction (UNISDR): ‘a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources’ (UNISDR, 2009). When it comes to natural disasters, the origin of this disruption is a natural process or phenomenon that may arise from a variety of geological, meteorological, hydrological, oceanic, biological or technological sources, and sometimes in combination (SOPAC, 2009, p.16). The variety of natural disasters can include earthquakes, tsunamis, floods, wildfires, droughts, epidemics and volcanic eruptions. The focus of my thesis is on the impact of earthquakes and tsunamis. This type of natural disasters is unpredictable and causes severe damage and thousands of deaths in a very short amount of time. The unpredictability of earthquakes and tsunamis makes it impossible to stop them. It is possible, however, to minimise losses and damages through appropriate preventive and mitigation measures, such as anti-seismic structures, early warning system, sea walls, community preparedness and, as I propose in my research, resilience enhancement.

The numerous definitions of resilience in the area of natural disasters provide evidence of the popularity of the concept amongst not only social scientists but also regional and international development organisations. Yet, the use of the concept in this area is still contested. A frequent criticism is that the term is only an expression, complementing the use of other disaster terms, such as vulnerability or risk (Manyena, 2006, p.434) and adaptive capacity (Cutter et al., 2008b, p.600). Definitions describing resilience in a disaster context can bring more confusion. For instance, scholars have not clearly specified the level of analysis at which resilience is theoretically expected to exist (e.g. individual, community, regional). Furthermore, most definitions proposed that resilience leads to results such as adaptation, survival, change, reorganisation, better

performance, adjustment to normal, bouncing back, and learning. Although at first glance these results could look similar, they have different implications. For instance, a change could have positive or negative implications; it does not necessarily mean performing better. And in terms of bounce back, what would happen if a community returns to the pre-disaster levels of vulnerability? Would it still be considered resilient? These questions and other disagreements will remain open for now as the next chapter provides clues that would contribute to clarifying these questions and other disagreements.

Preventing and reducing disaster risk and losses have been set as the main goal in disaster risk reduction policies (UNISDR, 2012a; UNISDR, 2015). However, focusing on disaster risk could restrict the capacity of communities to cope with disasters. On the contrary, focusing on resilience could empower local communities to take collective action in the face of natural disasters. As I explained in Chapter 1, the concept of resilience in the natural disaster field became fashionable due to the 2005 World Conference on Disaster Reduction in which the need and ways to build resilient communities were identified. The integration of disaster prevention and risk reduction into the policies and increasing the local capacity for building hazard resilience were two of the main conclusions (UNISDR, 2012a). In this context, the concept can be seen as spanning both pre-event measures that seek to prevent hazard-related damage and losses, and post-event strategies designed to cope with and minimize disaster impacts (Bruneau et al., 2003, p.735). The concept of community resilience has gained extensive acceptance in disaster management (Manyena, 2006, p.434) and the term will probably continue to be used because evidence shows that ‘resilient communities are far less vulnerable to hazards and disasters than less resilient places’ (Cutter et al., 2008b, p.601).

There are many definitions of resilience in natural hazards context. In table 2.3, I compile the most common definitions in the area. While scholars have not agreed on a standard meaning of the term, certain common characteristics can be identified in the definitions that have been put forward. In general, resilience is understood as a capacity, as I have argued throughout this chapter. The term is generally used to describe the capacity to cope with or survive hazards. The

ability to adapt, regenerate and reorganize after the disaster can be also found in most definitions. Additionally, some scholars narrowed this ability to the capacity of learning from past disasters and performing better in the future in the face of adversity. Despite the common features identified, definitions of resilience vary depending on the type of natural disaster. For example, in the case of earthquakes, the term 'seismic resilience' is used. In this context, resilience is conceptualised as the ability of both physical and social systems to withstand earthquake-generated forces and demands, and to cope with earthquake impacts through situation assessment, rapid response, and effective recovery strategies (Bruneau et al., 2003, p.737). This implies devising strategies for preventing future seismic risks.

Colten et al. (2008, p.38) describe resilient communities in the disaster context as those that have the following capacities: integrated emergency institutions and communications; formal disaster plans; trained first responders; multihazard event response exercises; a reserve of personnel, material, and financial resources; public education and information; and continuing long-term planning for recovery and vulnerability reduction. However, these characteristics emerged in the context of developed countries, specifically from the hurricane Katrina, one of the most powerful storms that have struck the United States. Therefore, these elements may not be necessarily applicable to other contexts such as developing countries.

Other common capacities of the resilient communities include social capital (Adger, 2000; Cox and Perry, 2011; Murphy, 2007; Ross and Carter, 2011; Tompkins, 2005), principally elements such as norms (Adger, 2000) and networks (Adger, 2000; Buikstra et al., 2010). Furthermore, a positive outlook (Buikstra et al., 2010, p.981) and community participation (Berkes and Turner, 2006; King, 2007; Perez-Sales et al., 2005) are considered relevant factors for communities in the face of disasters. Additionally, King (2007) point out the importance of the role of community organisations in the process of response and recovery as evidenced in the 2004 Asian tsunami tragedy. Moreover, Ross and Carter (2011, p.2) have observed the spontaneous activation of social capital bonds in disasters in Australia and New Zealand. Lastly, in the case of 1995

Kobe earthquake in Japan, Aldrich (2011, p.596) investigated the factors which speed up or slow down recovery after a disaster at the neighbourhood level and the main conclusion of his research was that ‘the amount of social capital most strongly determines recovery rates’.

According to Landau and Saul (2004), community members are a natural support system with many advantages over outside providers. They have the essential local knowledge, support networks, community organisations (Walsh, 2007) and leadership. These capacities would bring more contextualised programs to the real needs of communities. Most of the social resources are often overlooked in disaster planning and the efforts are mainly put into economic and structural resources. Both the respect for social capacities and the efforts that are driven by local priorities are generally more successful than programmes imported by outsiders (Walsh, 2007, p. 223). It cannot be assumed, however, that a programme which respects the local needs and cultural practices will always produce effective outcomes for the community. Despite this fact, researchers argue that community members are the main actors in emergency management and they have to be involved as active participants and protagonists of the process (Murphy, 2007; Perez-Sales et al., 2005; Walsh, 2007). This view is based on the notion that it will contribute to the development of resilient and sustainable communities (Murphy, 2007; Walsh, 2007). Nevertheless, despite the relevance of community members in building resilience, people’s participation in disaster planning is still scarce. This situation is even worse in developing countries, especially in Chile where a top-down approach is prevalent. People are usually considered as *victims* and recipients of external aid with a limited scope of action.

Finally, resilient communities may not always lead to positive outcomes. The negative outcomes could be called the *dark side* of community resilience. For example, socially isolated individuals who lack social networks are less likely to be rescued, seek medical help, take preventative action, or receive assistance from others in the form of shelter (Dynes, 2006, p.7). Additionally, assistance may not necessarily be extended to strangers or people who are considered ‘different’ (Murphy, 2007, p. 303). The strong sense of community identity can

generate the exclusion of other social groups which are not integrated into the inner social net of the communities, which could in turn limit the aid and assistance towards them. They may attempt to monopolise resources, information and access for their own members and exclude others. Communities may also play a role that is detrimental to their members or to society at large. For instance, community cohesion in disaster response may encourage members to remain in vulnerable locations because they have a false sense of security or desire to maintain community solidarity (Patterson et al., 2010, p. 139). These negative effects could generate suspicions regarding the real contribution of the community resilience perspective to the disaster field. Furthermore, there is a modest amount of empirical evidence regarding the role of community resilience in facilitating or impeding the response and recovery periods of the disasters. Notwithstanding the dark side of community resilience, the widespread use of community resilience in natural disaster context suggests that the term will probably continue to be used in the field for a long time.

Table 2.3. Definitions of resilience in natural disasters context

Author, year	Definition
Comfort (1999)	Focusing on earthquake disasters and specifically on post-disaster response, the author defines resilience as ‘the capacity to adapt existing resources and skills to new situations and operating conditions’ The term implies both the ability to adjust to ‘normal’ or anticipated levels of stress and to adapt to sudden shocks and extraordinary demands.
Mileti and Ebrary (1999)	Local resiliency with regard to disasters means that a locale is able to withstand an extreme natural event without suffering devastating losses, damage, diminished productivity, or quality of life without a large amount of assistance from outside the community.
Bruneau et al. (2003)	Community seismic resilience is defined as the ability of social units (e.g., organizations, communities) to mitigate hazards, contain the effects of disasters when they occur, and carry out recovery activities in ways that minimise social disruption and mitigate the effects of future earthquakes. The objectives of enhancing seismic resilience are to minimise loss of life, injuries, and other economic losses, in short, to minimise any reduction in quality of life due to earthquakes.
Wisner et al. (2004)	The ability of an actor to cope with or adapt to hazard stress. It is a product of the degree of planned preparation undertaken in the light of potential hazard, including relief and rescue.
Vale and Campanella (2005)	Achieving resilience in a disaster context means the ability to survive future natural disasters with minimum loss of life and property, as well as the ability to create a greater sense of place among residents; a stronger, more diverse economy; and a more economically integrated and diverse population.
Manyena (2006)	Disaster resilience could be viewed as the intrinsic capacity of a system, community or society predisposed to a shock or stress to adapt and survive by changing its non-essential attributes and rebuilding itself.

CARRI (2009)	Community resilience is the capability to anticipate risk, limit impact, and bounce back rapidly through survival, adaptability, evolution, and growth in the face of turbulent change.
UNISDR (2009)	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. Resilience means the ability to 'resile from' or 'spring back from' a shock.
Zhou et al. (2010)	The capacity of hazard-affected bodies (HABs) to resist loss during a disaster and to regenerate and reorganise after a disaster in a specific area in a given period.
Lopez-Marrero and Tschakert (2011)	The capacity of a system to absorb hazard disturbances, learn from mistakes in past responses, reorganise after disturbance events, and prepare for possible future shocks and anticipated impacts.

2.4. Measuring community resilience: Academic and non-academic approaches

Besides the difficulties of defining community resilience analysed in the previous sections, measuring the phenomenon in the context of natural disasters is also problematic. The concept could become clearer through further specification and operationalisation; nonetheless, there is limited empirical evidence (Boon et al., 2012, p. 7). Challenges remain in the development of consistent factors or standard metrics that can be used to evaluate the resilience of communities (Cutter et al., 2008b, p.598), and contribute to the development of operational tools for policy and management (Klein et al., 2003, p.41). But this challenge is not an easy task because there is no clear consensus on the nature of community resilience. Nevertheless, as *capacities* are the core of community resilience, the disagreement about measuring it in disaster contexts could be solved by using capacities as standard metrics. The analysis of these capacities can make the measuring process easier because capacities are observable which could provide a better understanding of community resilience and the role it plays in the context of natural disasters.

I identified two different approaches to measuring community resilience in the existing literature. One belongs to the academic sphere in which several scholars have proposed theoretical models while the other to non-academic institutions such as non-governmental organisations (NGOs) and international organisations that have developed simple frameworks, practical manuals and toolkits.

2.4.1. Academic approaches

During the last decade, various models from the academic sphere have been proposed to measure community resilience in a natural hazard context (see table 2.4). Currently, there are seven main models; disagreement regarding the definition of community resilience brings substantial differences between models with respect to operationalisation. There are two main tendencies in modelling community resilience. In the first one, researchers place more emphasis on providing a theoretical framework to assess community resilience (e.g., Boon et al., 2012; Bruneau et al., 2003; Cutter et al., 2008b; Norris et al., 2008). In general, they adapt elements from different models in order to create new ones which are applied to natural hazards context. However, these approaches tend to lack empirical support, with a recent trend towards the use of a hypothetical application (e.g., Boon et al., 2012). Another interesting fact is that these models originated from diverse fields, including engineering, geography, health sciences and ecology. By contrast, in the second approach, the emphasis is on the intervention because the models have been adapted and developed with the objective of helping communities that face specific risk conditions in the context of natural disasters (Landau, 2007; Sagala et al., 2009; Tobin and Whiteford, 2002). Therefore, the focus of these models is on the factors that contribute to the development of community resilience. These models have been drawn from diverse disciplines, mainly ecology and psychology and have been tested in different communities through case study methodology.

In general, the results of empirical research in the academic approach are scarce and its impact on disaster risk reduction has not been clearly identified. Because community resilience is a relatively new topic, studies on this area started around the 2000s. Growing research interest in this field can be explained by the dramatic rise in natural disasters during the past decade. The purpose of the first studies was mainly to examine disaster management strategies and the community response after a disaster (Paton et al., 2008; Tobin and Whiteford, 2002; Perez-Sales et al., 2005). As research on community resilience progressed, some researchers started to take interest in the factors that enhance community resilience and facilitate recovery (Cox and Perry, 2011; Guleria and Edward, 2012; Harte et al., 2009; Lopez-Marrero and Tschakert, 2011; Winkworth et al., 2009). Furthermore, the adoption of the Hyogo Framework for Action 2005-2015 (UNISDR, 2012a) and The Sendai Framework for Disaster Risk Reduction 2015-2030 (UNISDR, 2015) has motivated researchers to develop specific models and indicators for conducting community-based resilience research.

Finally, the methods applied to community resilience have been essentially qualitative, using interviews, observations and focus groups as main research instruments. One recent study involved participatory methods and techniques such as conceptual mapping and participatory mapping (Lopez-Marrero and Tschakert, 2011). This study represents one of the few studies involving community members in the research process. Although a number of studies have been carried out in developed countries (Harte et al., 2009; Lopez-Marrero and Tschakert, 2011; Olwig, 2012; Perez-Sales et al., 2005), the application of this approach in Latin America and especially in Chile is still in its infancy, with the exception of a few specific studies.

Table 2.4. Academic models of community resilience

Authors and year	Purpose of the model	Development of the model	Methodology	Discipline
Tobin and Whiteford (2002)	To demonstrate how sustainable and resilient communities might be created in the face of prevailing natural and technological hazards.	The elements of three separate models were adapted: The Mitigation model proposed by Waugh (1996), the recovery model described by Peacock and Ragsdale (1997) and a structural-cognitive model put forward by Tobin and Montz (1997)	Case Study: The Eruption of Tungurahua Volcano in Ecuador.	Ecology
Bruneau et al. (2003)	To provide a framework to quantitatively assess and enhance the seismic resilience of communities.	This framework was developed using three complementary measures of resilience: ‘Reduced failure probabilities’, ‘Reduced consequences from failures’, and ‘Reduced time to recovery’.	Illustrative examples of measures of resilience, including measures for various critical systems (e.g., hospitals, and community response systems)	Engineering
Landau (2007)	To initiate and sustain change in communities that have undergone rapid, untimely, and unpredictable transition or loss. This model provides the tools to identify and coach people from within the community, to act as natural agents for change.	The model evolved, from transitional family therapy (TFT) and grew from early personal and professional experiences.	Case Study: This model has been used in different communities around the world: Argentina, Kosovo, South Africa, Taiwan, and the United States, affected by different hazard events (economic stress, natural disasters, warfare, drug, etc.)	Psychology
Cutter et al. (2008b)	To improve comparative assessments of disaster resilience at the local or community level. The model was created specifically to address natural hazards, but could be adapted to other rapid onset such as terrorism, or slow onset natural hazards like drought.	A candidate set of variables for implementing the model is presented as a first step towards its implementation.	None	Geography

Table 2.4. Academic Models of Community Resilience (continued)

Authors and year	Purpose of the model	Development of the model	Methodology	Discipline
Norris et al. (2008)	To present a community resilience theoretical model that encompasses contemporary understandings of stress, adaptation, wellness and resource dynamics.	In this model, community resilience emerges from four primary sets of adaptive capacities-Economic Development, Social Capital, Information and Communication, and Community Competence-that together provide a strategy for disaster readiness.	None	Health Sciences
Sagala et al. (2009)	To model the social resilience of mountain communities under Volcanic Risks.	The model is based on causal-relationship factors that contribute to the development of social resilience in communities at personal, community and institutional level.	Case Study: Communities living in the southern flanks of Mt. Merapi, Yogyakarta, Indonesia.	Psychology
Boon et al. (2012)	To use Bronfenbrenner's theory for assessing resilience to a natural disaster at diverse scales. This theory can be employed to: benchmark social resilience; target priority interventions required; and measure progress arising from these interventions to enhance resilience to natural hazards.	Bronfenbrenner's bioecological theory was used as a framework for modelling community resilience to natural disasters.	A hypothetical application of Bronfenbrenner's theory to measure community resilience to a natural disaster.	Ecology

2.4.2 Non-academic approaches

The non-academic approach encompasses mainly non-governmental organisations (NGOs), non-profit organisations, international organisations and governmental initiatives that outside of the academic sphere have contributed to the community resilience measurement in the area of natural disasters (see table 2.5). Most of these organisations have developed frameworks, indicators and dimensions of community resilience as a part of projects funded by governments sources (e.g., CARRI, 2008; CCE, 2010; Interagency group, 2009; Torrens Resilience Institute, 2012; U.S. IOTWS, 2007). Furthermore, most of them originated in developed countries, specifically Australia (The Torrens Resilience Institute, 2012), Canada (The Centre for Community Enterprise, 2000) and United States (The U.S. Indian Ocean Tsunami Warning System Programme and Community and Regional Resilience Initiative, 2007), with the exception of the international organisations (The International Federation of Red Cross and Red Crescent Societies, 2012; The Interagency group, 2009) which have designed their frameworks on the basis of the experience gained in the context of developing countries affected by natural disasters.

The disciplines that have influenced the principles and characteristics of the non-academic approach are mainly related to community and sustainable development, disaster risk reduction, disaster management and climate change. The only exception is The Community and Regional Resilience Initiative (CARRI) which takes into consideration a multidisciplinary approach, specifically from economy, ecology, climate change, emergency management, geography, humanities and psychology. Another important point is that most of the resilience frameworks originated in this approach have centred on the local or community level, although some organisations have also considered the national level (e.g., U.S. IOTWS). In the case of The International Federation of Red Cross and Red Crescent Societies (IFRC), even though the emphasis is on the local level, its community resilience

framework could extend to comprise a multilevel approach, including individual, community, national, regional and global levels.

Most of the non-academic frameworks were developed with the purpose of providing a simple tool that allows communities to assess their own level of resilience (e.g., CARRI, 2008; CCE, 2000; Interagency group, 2009; The Torrens Resilience Institute, 2012; U.S. IOTWS, 2007). The main aim of these organisations is to create a clear toolkit that can be useful not only for community members, but also for other non-academic stakeholders such as policy makers, government agencies, non-governmental organisations and practitioners. However, there are some organisations that narrow down their target audience to particular stakeholders such as The International Federation of Red Cross and Red Crescent Societies (IFRC, 2012), which intending to provide a resilience framework that serves as a reference across their institutional partners. Likewise, the focus of the community resilience assessment of The Making Cities Resilience campaign (UNISDR, 2012b) is on local governments. Despite these slight differences in the target audience, the common goal is to help communities reduce their risk in the face of natural disasters or other distress, as well as to provide useful instruments in developing effective disaster risk reduction programmes.

The practical orientation of the non-academic frameworks can be seen in the methodology applied. In the strict sense, these frameworks have not developed 'real models' of community resilience but rather have designed simple guidelines, or a system of indicators or dimensions for understanding and measuring the concept of community resilience. In addition to this, these frameworks diverge in the level of operationalisation. Some extend their measurement only to two levels. For example, The Community and Regional Resilience Initiative (CARRI, 2008) proposes four main components of community resilience and a list of candidate variables and categories for each of them. Similarly, The U.S. Indian Ocean Tsunami Warning System Programme (U.S.IOTWS, 2007) proposes four resilient elements and benchmarks with their respective indicators. A simpler measurement proposal in

two levels was designed by The Torrens Resilience Institute (TRI, 2012) and the Making Cities Resilient campaign (UNISDR, 2012b) where the indicators are presented as questions for each domain or dimension of community resilience. A more sophisticated system was suggested by other organisations which, in addition to defining the components and characteristics of community resilience, also proposed the characteristics of an enabling environment (The Interagency group, 2009) or factors that strengthen community resilience (IFRC, 2012). Nonetheless, the most advanced measurement system was designed by The Centre for Community Enterprise (CCE, 2000) which operationalises community resilience in three levels. In addition, it proposes questions, a rating system and data collection methods for each indicator.

Despite the differences in the terminology and the level of operationalisation, the non-academic frameworks share essential similarities. The most relevant is the methodology which is primarily participative and qualitative. Most of the frameworks have been developed from the direct experiences of these organisations in disaster contexts (e.g., CCE, 2000; IFRC, 2012; The Interagency group, 2009; UNISDR, 2012b). This participative approach implied the involvement of several stakeholders such as governments, nongovernmental organisations, practitioners, community members, and even researchers and experts in the process of building new frameworks and indicators to measure community resilience. The implementation of qualitative techniques such as interviews, focus groups and participatory mapping was fundamental for ensuring the involvement of these actors. Furthermore, these frameworks have considered the use of secondary data and contributions from academics through the examination of existing models (e.g., The Torrens Resilience Institute, 2012) or simple literature reviews on the community resilience topic. Finally, an important methodological characteristic of non-academic frameworks is that most of them have been field tested, which could ensure the applicability of these models to the reality of communities exposed to major risks in the face of natural disasters.

Another distinctive aspect of non-academic approaches is that proposed a methodology that orientates the process of application of the community resilience frameworks and measurement systems to reality. Thus, instead of proposing sophisticated theoretical models, they designed simple manuals, scorecards or self-assessment tools with specific guidelines about how to measure community resilience that community members and other actors can easily use. Unfortunately, this simplicity and the lack of research validity underpinning these non-academic frameworks makes some researchers reluctant to use them. However, this simplicity can also be an advantage because it could expand the possibilities of usage of non-academic frameworks in a variety of contexts which could generate a bigger impact compared to the academic ones.

Finally, some non-academic organisations also evaluated the practicality and utility of their respective frameworks. In general, they point out that the main utility is in the planning process of disaster risk reduction projects that can be used as a guide by several stakeholders, including communities affected by natural disasters. For instance, it can help evaluate projects to establish resilience baseline and monitor change as result of project implementation (U.S. IOTWS, 2007); it can also be used as a part of the community selection process in projects to define programmes objectives (IFRC, 2012) or to guide budget allocations (UNISDR, 2012b). More specifically, some institutions have indicated some impacts although they lack valid evaluation. For example, according to The Centre for Community Enterprise (CCE, 2000) its resilience manual has been used by several communities, government agencies, researchers and practitioners. Academia has also benefited from non-academic frameworks. For instance, The Interagency Group (2009) indicated that the ‘characteristics of resilience’ proposed by them have been used by scientists for developing their own resilience models and frameworks. A major impact has been identified by The Making Cities Resilient campaign (UNISDR, 2012b) which involved more than 1,400 local governments around the world that nowadays use the disaster resilience self-assessment tool. Unfortunately, regardless of the broad

scope of possible usages, the lack of valid impact evaluation of non-academic models could raise some doubts about their real effectiveness.

Table 2.5. Non-academic frameworks of community resilience

Authors and year	Purpose of the frameworks	Development of the framework	Methodology	Discipline
The Centre for Community Enterprise (CCE, 2000)	To create a simple, practical resource aims to help rural communities cost-effectively to assess their own state of resilience and establish priorities for strengthen their ability to respond to, and influence the course of, social and economic change.	The framework was developed and designed by the Centre for Community Enterprise (CCE) with funding from Forest Renewal BC, Canada.	It was created a Manual with dimensions and characteristics of resilience. The model was tested in two towns in south-eastern British Columbia.	Community Economic Development (CED)
The U.S. Indian Ocean Tsunami Warning System Programme (U.S. IOTWS, 2007)	To provide a guide for evaluating coastal community resilience to tsunamis and other hazards. It is intended to serve as a framework to highlight strengths and identify weaknesses and gaps in resilience that can be addressed by the community together with government agencies, non-governmental organizations (NGOs), private sector, and other stakeholders.	It was developed by U.S Indian Ocean Tsunami Warning System Program (IOTWS) supported by the United States Agency for International Development and partners.	It was created a CCR assessment through a rating system which provides information and data to compare, either qualitatively or quantitatively, the resilience status of the community with the desired condition described by the benchmark.	Community Development; Coastal Management and Disaster Management.
The Community and Regional Resilience Institute (CARRI, 2008)	It is intended to help communities assess, measure, and improve their resilience to the variety for threats and disruptions of all kinds, and ultimately be rewarded for their efforts.	The Community Resilience System (CRS) was developed by the Community Resilience System Initiative (CRSI) and implemented by CARRI in partnership with the Meridian Institute, a not-for-profit organization. The programme is funded by the United States Department of Homeland Security.	Designing a Community Resilience System (CRS) which brings together the resources, tools, and processes needed to improve community resilience.	Multidisciplinary
Twigg (2009) for Interagency group (ActionAid, British Red Cross, Christian Aid, Practical	To support the promotion of the Hyogo Framework for Action (HFA), particularly at local level. This model is intended to provide a comprehensive framework for resilience and DRR that could complement national and international-level indicator work led by UN agencies.	The development of the framework was commissioned by a group of six agencies: ActionAid, Christian Aid, Plan UK, Practical Action and Tearfund, together with the British Red Cross/International Federation of Red Cross and Red Crescent Societies. This Interagency group has	It was defined the main characteristics of community resilience organized under five thematic headings, representing the areas of DRR intervention, based on a framework developed by the UN International Strategy	Community-based Disaster Risk Reduction (DRR); Climate Change and Sustainable Development

Action, Plan UK and Tearfund)		received funding from the UK Department for International Development (DFID).	for Disaster Reduction (UNISDR)	
The Torrens Resilience Institute (TRI, 2012)	To develop a tool for communities to measure their community resilience to all hazards that enable local policy makers to establish priorities, allocate funds and developing emergency and disaster management programs more effectively.	The framework is an Australian Government Initiative funded by the Commonwealth Government National Emergency Management Program.	It was created a definition, framework and a tool or scorecard of community resilience for general use.	Disaster Risk Reduction
The International Federation of Red Cross and Red Crescent Societies (IFRC, 2012)	To provide a definition and perspectives on resilience that serve as a reference across the key partners of the IFRC and the network of National Societies.	It was designed as part of a depth study of CBDRR (Community- based disaster risk reduction) programmes implemented by the IFRC's 2004 Indian Ocean tsunami operation. The study was carried out by ARUP International Development.	Identifying a list of six characteristics that describe a safe and resilient community; critical factors or key determinants which help or hinder programme implementation, success and long-term sustainability.	Community Development; Sustainable Development; Humanitarian Action; Community-Based Disaster Risk Reduction.
The United Nations Office for Disaster Risk Reduction (UNISDR, 2012b)	To develop and deploy practical tools and resources to help support and empower local governments to build their resilience to disasters.	It was developed by The Making Cities Resilient campaign: 'My City is getting ready!', a UNISRD initiative launched in May 2010.	Designing a Local Government Self-Assessment Tool for Disaster Resilience. It includes local-context indicators, presented as 'key questions', each of which is assessed on a scale from 1 to 5. Key questions are aligned to the HFA priority areas and core indicators as well as to the Ten Essentials of The Making Cities Resilient.	Disaster Risk Reduction

2.4.3. Comparing academic and non-academic approaches

As the analysis above illustrated, the academic and non-academic approaches display both similarities and differences. The differences and similarities vary in terms of the purpose, characteristics of the model, methodology, field tested, country of origin, discipline and level of analysis.

The main difference between the non-academic and academic trends is the purpose that has guided the creation of community resilience frameworks and measurement systems. The non-academic approach is mainly focused on practical purposes; this means that the main objective is to help communities at risk in the face of natural disasters through the creation of community-friendly tools or manuals for measuring community resilience. On the contrary, the academic approach is more centred on research and theory. The main objective is the creation of theoretical models or indicators for understanding and measuring community resilience. Nevertheless, despite the differences in the purpose, mutual influence is possible, in the sense that academic frameworks could benefit from non-academic ones and vice versa. For instance, an academic could undertake consultancy services to assist NGOs, governments or international organisations in designing and evaluating resilience programmes or disaster risk reduction policies.

I also found some methodological differences. Non-academic frameworks apply essentially qualitative and participative methods, while the academic models, apart from qualitative methodologies, have recently started to incorporate quantitative and mixed method approaches. Likewise, the validation of the measuring system also varies between trends. The non-academic approach has field-tested the majority of its frameworks with communities affected by natural disasters. On the contrary, the academic approach, in general, has only proposed theoretical or hypothetical applications of its models which have not been tested in communities yet.

Academic and non-academic approaches share four main characteristics. The first one is the country of origin; as both approaches have generated their models in the context of developed countries. However, in the case of the non-academic approach, the frameworks have also been field-tested in developing countries. The second common similarity is the multidisciplinary approach that guides the design of the system of measuring. The difference lies in the disciplines used; the academic models generally founded their principles on traditional disciplines, mainly ecology, engineering, psychology, geography and health sciences, while the non-academic frameworks use contributions from emerging disciplines, especially community and sustainable development, disaster risk reduction, disaster management and climate change. The third common aspect is the local or community level that both trends use in the analysis and development of their models and frameworks for measuring community resilience.

Finally, the academic and non-academic perspectives for measuring community resilience would raise new questions regarding which approach is the most suitable for measuring community resilience. Each of these approaches is valuable and has advantages. The final decision depends on the aim of the researcher or practitioner, as well as the identification of the target audience to whom the framework or model is thought to be of interest.

2.5. Measuring community resilience: Focusing on capacities

In the previous section, I summarised the general differences and similarities between academic and non-academic approaches. In this section, I explore my idea of resilience as a capacity.

As I have argued before, resilience can become clearer and less ambiguous through the use of capacities as a measurement system. As I have defined capacities as the core of community resilience in my research, I propose that resilience in the context of disasters should be understood basically as a **set of capacities or resources**

activated to cope with and recover from disasters.¹ Nevertheless, studies focusing on identifying these capacities and the role they play in the context of natural disasters are still missing. Consequently, there are no studies on the nature and characteristics of these capacities. One of the main limitations is the terminology used in different frameworks. The capacities are usually referred to as ‘indicators’, ‘characteristics’, ‘components’, ‘elements’, ‘areas’ or ‘dimensions’. Having several terms could restrict the use of capacities in disaster field. Another important limitation is the level of analysis. Most of the capacities are orientated to ‘city’ local level and only a few to small-scale communities which as I explained before, played an important role in the 2010 Chile earthquake and tsunami. In Chile, local governments have not set up effective mechanisms to involve small-scale communities in the decision-making process. Consequently, the role of these communities has been neglected. This could be detrimental to the real and effective involvement of communities in building resilience. I propose that resilience should be constructed not only from a local ‘city’ level but also from a local ‘micro’ level using a bottom-up approach.

The existence of several models of community resilience in academic and non-academic approaches has led to a large number of capacities or resources. Regarding the academic approach, I identified more than 113 capacities organised in 29 main areas. In the non-academic approach I found more than 206 capacities structured in 41 areas. Although there are many capacities that overlap, the number of capacities still reaches more than 100. This shows not only the different ways in which resilience is understood but also the ambiguity of this concept as I have discussed throughout this chapter.

On the negative side, the broad range of capacities could create suspicion and increase criticism of the real contribution of community resilience to the natural disaster field. Nevertheless, on the positive side, depending on the context, resilience

¹ This is the basic definition that I will adopt for now. The concept is going to be refined in the course of my thesis when other elements of analysis emerge.

could necessarily adopt different characteristics. This means that the capacities and models would vary depending on the type of natural disaster and other geographical, demographic, political, economic and social factors. For instance, the capacities for coping with earthquakes are not necessarily the same as those in the case of wildfires. The same logic would apply to other contexts such as developed and developing countries and rural and urban areas. This would explain why each model favours specific capacities over others: they were developed in different contexts, disciplines and for different purposes. For example, some models emphasise social capacities over economic ones. This is the case of the non-academic model designed by The Centre for Community Enterprise (CCE, 2000) which aims to help rural communities take intentional action to enhance the personal and collective capacities. The participative approach of this model and the context in which it was generated would explain the focus on social capacities such as participation and leadership. Furthermore, depending on the field, models promote certain capacities over others. For instance, models originated in psychology promote capacities linked to this area, such as cognition, emotions, or behaviours (e.g., Landau's model, 2007).

The variety of models and capacities could represent an advantage because community resilience can be applicable to several contexts. This also brings up the necessity of developing community resilience models and capacities contextualised to the reality of communities. This would open a new window of opportunity for the design of sustainable models adapted to the local needs of the communities affected by natural disasters. Adapting a model and capacities to the reality of communities is a crucial principle in my research; this will guide the development of the following chapters in my thesis. In the next chapter, I present a theoretical model and the specific capacities considered as appropriate for the Chilean context.

Conclusions

The objective of this chapter was to clarify the concept of community resilience within the context of natural disasters. This is the first step in order to address my research question and purpose of my thesis.

In order to understand the impact of the 2010 Chile earthquake and tsunami on community resilience, it was necessary first of all to clarify the meaning of community resilience. The historical review of the term resilience as well as the analysis of the definitions existing in several fields, especially in natural disaster field, led me to conclude that resilience is essentially ‘a set of capacities or resources activated to cope with and recover from disasters’. As there is not agreement about the concept, I suggest that focusing on *capacities* would contribute to clarifying the meaning of this concept. These capacities are the core of community resilience and understanding them can be an opportunity to gain new insights into the role of community resilience in coping with and recovering from natural disasters. Furthermore, focusing on capacities can be beneficial for the purpose of measuring community resilience because capacities are observable, which can contribute to a better understanding of community resilience in operational terms.

Focusing on resilience capacities instead of disaster risk can empower local communities to take collective action in the face of natural disasters. Therefore, involving community members in disaster planning is crucial to empower them. To this end, it is necessary to change the approach of considering communities as victims or recipients of external aid. Communities are active agents. Therefore, they should be taken into account in the decision-making process. For this reason, I also claim that resilience should be constructed from a micro-level using a bottom-up approach as the experience of the 2010 Chilean disaster showed that collective action and survival strategies were more effective at the micro-level than at the city-level. Finally, despite the positive side of resilience and its ability to empower communities, it is important to clarify that resilience would not necessarily lead to

positive outcomes. There is also a *dark side* of resilience which will be analysed in more detail in the following chapters. The dark side of resilience is essential to understand the impact of the 2010 Chile earthquake and tsunami on community resilience.

The academic and non-academic models analysed in this chapter propose a large number of capacities. This reflects the ambiguity of the term and the several ways in which resilience is understood in the natural disaster field. Resilience capacities will vary depending on the context. Therefore, contextualisation is crucial to understanding community resilience. Specifically, the principle of *contextualisation* can be understood as ‘different capacities for different contexts’ and ‘different models for different contexts’. Based on this principle of contextualisation, the development of a model and capacities appropriate for the Chilean context will be the next task I carry out in the next chapter. Nevertheless, this will not be an easy task due to scarce empirical evidence in developing countries, especially in Chile. Additionally, most of the capacities and models existing in disaster field are oriented to ‘city’ local level and only few of them on small-scale communities.

CHAPTER 3

A THEORETICAL MODEL OF COMMUNITY RESILIENCE

Introduction

In the previous chapter, I clarified the concept of community resilience within the context of natural disasters. I concluded that resilience is basically ‘a set of capacities or resources activated to cope with and recover from disasters’. Therefore, my next step is to understand the dynamic of these capacities, in other words, how resilience works in the face of natural disasters. To this end, I will develop a theoretical model of community resilience appropriate for the Chilean context, which is the main focus of this chapter.

Designing this theoretical model will contribute to answering the research question and addressing my third research objective: to develop a model suitable for analysing community resilience in the context of natural disasters in Chile. This model will be tested in the El Morro case study. Subsequently, in Chapter 9, I will design an integrated model of community resilience which will incorporate the components of this theoretical model as well as the empirical evidence collected during my fieldwork. Furthermore, as capacities and external factors are the main components of this theoretical model, designing a theoretical model of community resilience will also allow me to address the two other research objectives of my thesis. Therefore, this chapter is integrative, gathering the main theoretical propositions that will serve as a baseline to approach my fieldwork in the El Morro case study. In other words, this chapter is the theoretical attempt to achieve the purpose of my thesis. Finally, the integration of these theoretical propositions and the empirical evidence in Chapter 9 will make it possible to fully accomplish the purpose of my research.

This chapter is divided into two main sections. In the first section, I propose a theoretical model that combines the academic model advanced by Norris et al.

(2008) and the non-academic framework put forward by The International Federation of Red Cross and Red Crescent Societies (IFRC, 2012). As I stated in the previous chapter, contextualisation is necessary for understanding community resilience, therefore, the selection of these two models is based on their suitability for the Chilean context. There are some benefits of combining both academic and non-academic frameworks. On the one hand, it could reduce the constraints that might accompany the selection of frameworks from just one approach and therefore, take advantage of the strengths that each model offers. On the other hand, combining the academic and non-academic frameworks implies the adoption of a multidisciplinary approach which could provide a more holistic perspective for understanding community resilience, transcending disciplinary boundaries. At the end of this section, I present some basic principles of community resilience. In one of these principles, I highlight the relevance of external factors, which I call hindering and enabling factors in the theoretical model. This provides a first glimpse of the role of external factors in building resilience, an area scarcely investigated in disaster field. I also test these external factors during the fieldwork. The introduction of external factors in this chapter contributes to addressing the second aim of my thesis: to examine the external factors that enhance or undermine community resilience in the Chilean context.

Finally, in the second section of this chapter, I focus on the resilience capacities that derived from the analysis of the capacities that I identified in academic and non-academic frameworks. I present the resilience capacities which I suggest are more suitable for the Chilean context, including social, economic and structural, planning, and information and communication capacities. I also test these capacities in the El Morro case study and later on, in Chapter 9, I present a final set of capacities. Addressing these capacities also provide more evidence to answer my first research objective: to analyse the resilience capacities that contribute to coping with and recovering from natural disasters in the Chilean context.

3.1. A Mixed approach for modelling community resilience: Developing a theoretical model

In this section, I present the theoretical model of community resilience. In order to clarify the process of elaboration of this model, I first present the Norris et al. (2008)'s model and the IFRC (2012)'s framework individually. Then, at the end of this section, I will present the combined theoretical model. On the one hand, the holistic, systemic and social approach that characterises Norris et al.'s model (2008) is relevant to understanding the capacities that contributed to dealing with the Chilean disaster. On the other hand, the practical components derived from the IFRC's experience (2012) in the context of natural disasters is useful for understanding not only the capacities but also the external factors that enhanced or undermined community resilience. Finally, in the development of the theoretical model, I incorporate some contextual elements involved in the 2010 Chile earthquake and tsunami in order to create a unified model of community resilience that would be applicable to Chilean communities.

3.1.1. Academic model: 'Model of stress resistance and resilience over time'

Norris et al.'s model (see figure 3.1), called 'Model of stress resistance and resilience over time', was developed using the Dohrenwend (1978) model of psychological stress and other contemporary theories. The basic principle that guides Norris et al.'s model is that 'the communities have the potential to function effectively and adapt successfully in the aftermath of disasters' (Norris et al., 2008). Therefore, communities are seen as actors with potential for resilience in a disaster context. This principle is relevant for my research because it promotes the idea of communities as active agents with inherent capacities to cope with disasters. This approach breaks with the traditional vision of communities seen as passive actors that can only manage a crisis with external support. In Chile, the role of communities was crucial in all the stages of the emergency. Communities were able to organise and coordinate several relief actions by themselves, such as community kitchens, which were central in reducing the impact of the earthquake and tsunami. In brief,

the notion of communities with potential, inner capacities or resources for coping with disasters is the essential assumption of Norris et al.'s model. This idea is the core principle of the theoretical model that I will design in this chapter.

Community resilience in Norris et al.'s model (2008) is understood as a 'process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance'. This model involves the following process (see figure 3.1).

- The process starts when a *stressor* such as a natural disaster occurs. Stressors are aversive circumstances that threaten the well-being or functioning of the individual, organisation, neighbourhood, community or society. These stressors vary in *severity, duration and surprise*. For example, the consequences of natural disasters including injuries, deaths, physical destruction and economic losses will be different in communities affected by low and high magnitude earthquakes which unavoidably will have an impact on the recovery capacity of the communities.
- The *crisis* symbolises a hypothetical balancing act between stressors and resources. The ideal outcome of the crisis is *resistance*, which means that the resources have effectively blocked the stressor and, accordingly, there is virtually no dysfunction, no matter how temporary. These resources have to be sufficiently *robust, redundant or rapid* to buffer or counteract the immediate effects of the stressor.
- Nevertheless, total *resistance* is impossible in the context of natural disasters such as earthquakes and tsunamis in which the capacities of the communities are usually overcome by the magnitude of this kind of disasters. For this reason, the notion of *transient dysfunction* is the most probable scenario after a disaster.
- *Resilience* occurs when resources are sufficiently *robust, redundant or rapid* to buffer or counteract the effects of the stressor and to determine a return to functioning, this time adapted to the altered environment. The more rapid the return to the pre-event functioning, the greater the resilience. For human

individuals and communities, this adaptation is manifested in *wellness*. The more severe, enduring, and surprising the stressor is, the stronger the resources must be to create resistance or resilience.

- The opposite result to resilience is *vulnerability*, which occurs when resources are not sufficiently *robust, redundant, or rapid* to create resistance or resilience, resulting in *persistent dysfunction*.

In summary, resilience in Norris et al.'s model (2008) is seen as a process rather than an outcome emerging from adaptive capacities or resources with dynamic attributes (robust, redundant and rapid) that generate adaptation to disaster context. Another distinctive aspect of Norris et al.'s model is that the process of resilience does not exclude dysfunction after a disaster. Nevertheless, this dysfunction is transient, being followed by a return to functioning (Norris et al. 2008).

Limitations of the academic model

The 'Model of stress resistance and resilience over time' does not characterise resilience as *growth* in the sense that *adaptive functioning* is not necessarily superior in level or character or effectiveness to pre-event functioning; it is simply different. This assumption could be accepted to a certain extent because although a community will not be the same after the disruption of a disaster, the difference between the pre and post event functioning could imply growth. For example, in the case of Chile, several communities reported an increase in solidarity and cooperation after the disaster. Therefore, this could imply a positive change and growth for some communities. In the context of developing countries, the notion of growth could also be associated with opportunity when communities improve the pre-existing condition of social vulnerability after the disaster struck. For instance, in some vulnerable communities in Chile, the poor-quality houses that were completely destroyed by the disaster were replaced by new tsunami-resistant houses which represent a considerable improvement.

On the contrary, it is also possible that in some communities the post-event situation drives in a *decay* of the community capacities. For instance, the widespread looting registered after the Chilean disaster could have broken the trust among neighbours. This is consistent with the idea of what I call the *dark side* of community resilience as I mentioned in the previous chapter. A state of decay could also be experienced in the case of disadvantaged communities which, after a disaster, go back to the same state of vulnerability that had existed before the event. In this context, the dysfunction will persist due to the continuous impact of multiple stressors associated with poverty and exclusion. In developing countries, this decline situation could be explained by the high level of vulnerability that affects communities exposed to natural disasters.

Finally, two new elements will be added in Norris et al.'s model (2008) in order to make it more suitable for the Chilean context. The first one is the notion of *growth* that occurs when communities return to functioning with more capacities or resources to adapt to the altered environment, which means that they become more resilient. The second one is the idea of *decay* that takes place when there is a decline in the community capacities or resources after the disaster or when the communities go back to the same state of vulnerability.

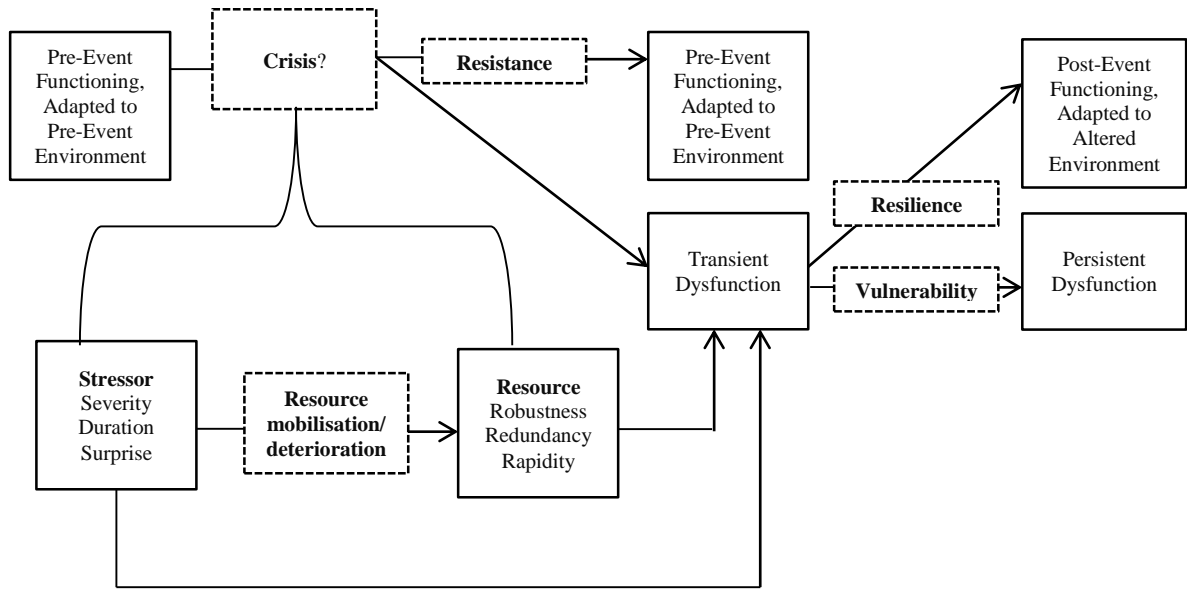


Figure 3.1. Model of stress resistance and resilience over time (Norris et al., 2008)

3.1.2. Non-academic model: ‘International Federation of Red Cross and Red Crescent Societies’

In order to complement Norris et al.’s model (2008), I will use ‘the conceptual framework for community resilience’ proposed by the International Federation of Red Cross and Red Crescent Societies (IFRC, 2012). This framework is based on the experience of the Community-based disaster risk reduction programmes (CBDRR) implemented by the IFRC in 600 communities in Indonesia, Sri Lanka, Thailand and the Maldives in the aftermath of the 2004 Indian Ocean tsunami. In the IFRC’s framework, resilience is understood as: ‘the ability of individuals, communities, organisations, or countries exposed to disasters and crisis and underlying vulnerabilities to: anticipate, reduce the impact of, cope with, and recover from the effects of adversity without compromising their long-term prospects’ (IFRC, 2012). In this framework, community resilience is achieved within a system (economic, infrastructure, ecological, social) that includes multiple activities, interactions and relationships (see figure 3.2). Similarly to Norris et al.’s model (2008), this framework sees community resilience as a process in which the capacities and resources of the community play the most important role. Therefore, the key component of this framework is also *capacity* which puts communities at the centre of the process. Consequently, this is in line with my idea of resilience as a capacity stated in the previous chapter.

The IFRC’s framework proposes that the first step to build resilient communities is to meet the basic needs of the communities. At the same time, a wider *enabling environment* that encompasses assets and capacities inside and outside of the community is essential for promoting community resilience. According to the IFRC’s framework (2012), building resources or assets (physical, natural, financial, social, political and human) is seen as critical ‘buffers’ to withstand disasters. These resources have to meet specific requirements for ensuring community resilience; they have to be robust, redundant, diverse, well located, and equitably distributed. The first two qualities are also found in Norris et al.’s model (2008), while the last ones are only proposed by the IFRC’s framework. These new qualities, including

diverse, well located, and equitably distributed, are relevant to the context of developing countries where the lack of economic and physical resources is one of the main problems, especially in a disaster context. For example, limited access to medical assistance is one of the main problems in vulnerable communities in Chile; the resources are not diverse and equitably distributed because commonly there is only one health centre for assisting a large number of people. Likewise, in some rural areas the access to medical services is hampered by the geographical isolation of communities.

Finally, apart from the resources and their qualities, the IFRC's framework (2012) also identifies the specific capacities that enable them to be mobilised. The most important are the capacities to adapt to change, self-organise, act and learn from experience. Therefore, adaptation is also similar to the understanding of resilience observed in Norris et al.'s model (2008). Nevertheless, some differences can be noticed, especially in the terminology used. Norris et al.'s model (2008) considers capacities to be resources, using them interchangeably, whereas the IFRC's framework distinguishes between them. According to IFRC's framework, capacities are those factors that are necessary to activate the resources existing inside or outside the community, which is similar to my idea of external factors. Nevertheless, in my thesis, I maintain that capacities are resources; taking the Norris et al.'s approach.

Limitations of the non-academic model

The notion of a wider *enabling environment* is the main contribution of the IFRC's framework (2012) as suggests the existence of other external factors that would contribute to promoting resilience. Nevertheless, this enabling environment is conceived only from a positive outlook. As I have argued above, resilience can also have a *dark side*. Therefore, some factors do not necessarily lead to positive effects on the community; they can also hinder community resilience. For instance, the political intervention after the Chilean disaster brought several internal conflicts in

communities. Consequently, in order to complement this framework, I also propose the existence of not only an *enabling environment* but of a *hindering environment* that includes those factors that can negatively impact on community resilience. In my theoretical model, the external factors emerging from these two environments will be called *enabling* and *hindering factors* respectively. This coincides with the elements of *growth* and *decay* that I proposed in Norris et al.'s model (2008), in the sense that enabling and hindering factors can lead to the growth or decay of resilience capacities.



Figure 3.2. A conceptual framework for community resilience (IFRC, 2012)

3.2. Combined theoretical model of community resilience

As a result of the combination of Norris et al.'s model with the IFRC's framework, plus contextual elements taken from the 2010 Chilean disaster, I propose a theoretical model of community resilience adapted to the situation of Chile which could also be applicable to other developing countries. The basic structure of this model has been taken mainly from Norris et al.'s model (2008), while the complementary elements, namely the qualities of resources and the idea of enabling and hindering factors, have been incorporated from the IFRC's framework. The final model and the main components are represented in the figure 3.3.

In the previous chapter, I concluded that community resilience in disaster context is essentially a 'set of capacities or resources activated to cope with and recover from disasters'. As I proposed that *capacities* are the core of community resilience, I will use this definition to develop my theoretical model of community resilience which can be explained as follows (See figure 3.3):

- I argue that community resilience appears as a result of a process that starts when a *natural disaster* occurs; this event can vary on severity, duration and surprise. The *crisis* symbolizes a hypothetical balancing act between the impact of the natural disaster and the capacities of communities.
- The ideal outcome after the impact of a natural disaster is *resistance*; this means that the capacities of communities are sufficiently *robust, redundant, rapid, diverse, equitable* and *well located* to completely block the impact of the event. Therefore the community continues to function at the pre-event level without any alteration. Nevertheless, it is unlikely that this state of complete resistance occurs in the context of natural disasters, especially in vulnerable communities; thus, the most realistic post-disaster scenario is the *transient dysfunction*, from which two results can emerge: resilience and vulnerability.

- *Resilience* takes place when the capacities of communities are sufficiently *robust, redundant, rapid, diverse, equitable* and *well located* to buffer the consequences of natural disasters; the community adapts to the altered environment and continues to function but at a better level. This state of resilience implies a *growth* in the sense that new, improved or strengthened resources for coping with future disasters emerge after the disaster. The greater the improved or strengthened resources, the greater the resilience. In order to mobilise these resources or capacities, *enabling factors* are necessary, including economic, physical, social and political factors. Therefore, the greater the *enabling factors*, the greater the resilience.
- The opposite result is *vulnerability* which occurs when the capacities of communities are not sufficiently *robust, redundant, rapid, diverse, equitable* and *well located* to counteract the impact of the disaster. As a result, a *persistent dysfunction* appears which is characterised by a *decay* of community capacities. This means that the capacities can be destroyed, undermined or weakened as a consequence of the natural disaster. The more numerous the destroyed, undermined or weakened resources, the greater the vulnerability. The presence of *hindering factors*, including economic, physical, social and political factors can affect negatively the capacities of communities. The greater the hindering factors, the greater the vulnerability.
- Finally, there is a special situation in which communities can go back to a similar level of functioning to the one that existed in the pre-event context. In this situation the community can turn to two possible outcomes: *persistent dysfunction* or *adaptive functioning*, depending on the level of the vulnerability of the communities which existed before the disaster. In the first scenario, if a community with high level of vulnerability goes back to the same state, a *persistent dysfunction* takes places because the community continues to be affected by the same vulnerability and the consequent social problems. Therefore, the greater the vulnerability that persists in the communities, the greater the dysfunction. In the second scenario, an *adaptive functioning* can be reached in advantaged communities which after

the impact of the disaster go back to their previous level of functioning. In this situation, *resilience* can take place because the community continues to preserve its favourable pre-disaster condition. In the following table 3.1, I introduce the key terms I use in my theoretical model.

Table 3.1. Key terms in the theoretical model of community resilience

Concept	Definition
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources (UNISDR, 2009).
Resilience	A set of capacities or resources activated to cope with and recover from disasters.
Capacities	Resources activated for coping with and recovering from disasters.
Resilience Capacities	Synonymous with Capacities.
Resources	A set of specific assets included in each of the resilience capacities.
Resilience Resources	Synonymous with Resources.
Enabling Factors	External factors situated outside the community, including economic, physical, social and political that affect positively the capacities.
Hindering Factors	External factors situated outside the community, including economic, physical, social and political that affect negatively the capacities.
Robust	One of the dynamic attributes of resources; resource strength, in combination with a low probability of resource deterioration (Norris et al., 2008, p.131)
Redundant	One of the dynamic attributes of resources; the extent to which elements are substitutable in the event of disruption or degradation (Norris et al., 2008, p.131).
Rapid	One of the dynamic attributes of resources; how quickly the resource can be accessed and used (mobilised) (Norris et al., 2008, p.131).
Diverse	One of the dynamic attributes of resources; the variety of resources existing in the community.
Equitable	One of the dynamic attributes of resources; fair distribution of resources.
Well located	One of the dynamic attributes of resources; good location of resources in the community.
Growth	The condition in which capacities have been strengthened after the disaster.
Decay	The condition in which capacities have been undermined after the disaster.

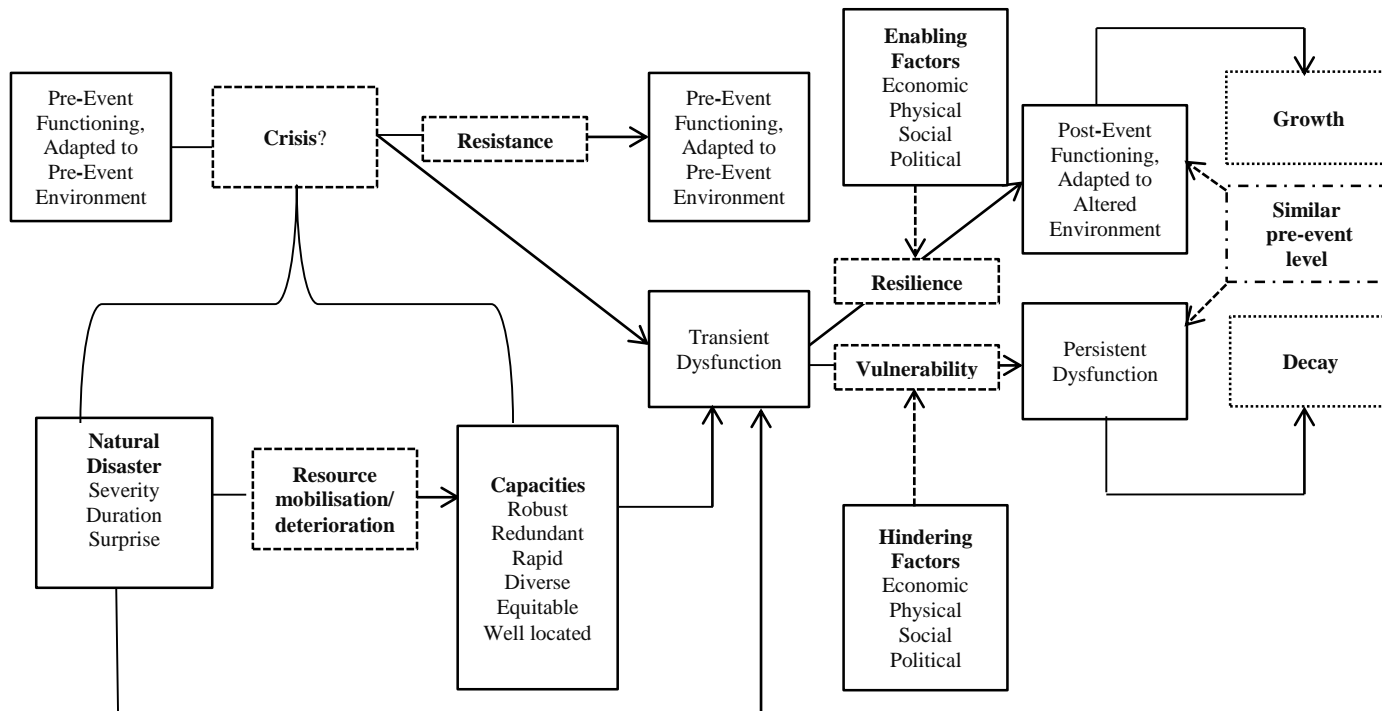


Figure 3.3. Theoretical model of community resilience

3.3. Principles of community resilience

Based on the analysis of my theoretical model, I suggest some basic principles that could provide a better understanding of the dynamic of community resilience in the context of natural disasters.

a) Communities have the potential for resilience

Community resilience involves a set of capacities necessary to buffer the impact of disasters. I argue that communities have the potential to mobilise these capacities in the face of disasters. My proposition is that communities have capacities; which can be either active or in a dormant state. These capacities can also vary in terms of quantity and quality. Consequently, I suggest that the level of resilience will vary from one community to another; some communities can have low levels of resilience, while others high levels of resilience, but all communities can have, to some extent, resilience or the potential for resilience. Even in extremely poor communities which seemingly do not have any capacity, some capacities in a latent state can be found. The dormant capacities may be activated by the impact of stressors such as natural disasters.

b) Community Resilience is a dynamic and flexible capacity that is part of a process

Community resilience is not a static capacity, it has to be sufficiently dynamic and flexible to adapt to different conditions. Community resilience is part of a process that encompasses diverse and interconnected components, specifically *capacities* and *external factors*. When natural disasters impact communities, the components of the process are affected, generating different results depending on the characteristics of the disaster and the capacities of communities. Therefore, community resilience is not

part of an isolated process but rather of an interrelated and interdependent process that is integrated into a wider environment which could enhance or undermine community resilience.

c) Communities are at the centre of community resilience

Understanding community resilience from a capacity perspective gives communities the most important role in activating and using their capacities to cope with and recover from natural disasters. Therefore, a local perspective and a bottom-up approach are necessary because these will empower communities to take collective action. Consequently, communities will be seen as *active agents* or *agents of change* rather than merely *victims* as I have mentioned in the course of my thesis.

3.4. Components of Community Resilience

Two main components emerged from my theoretical model I previously presented: *capacities* and *external factors* that are included in my first and second research objectives respectively. I consider these components crucial as most of the interactions that take place in my theoretical model can be explained by the variation of these components. Although the El Morro case study will provide more information to analyse these interactions, I think that it is important to present a preliminary theoretical understanding of these components.

3.4.1. External factors

Studies of external factors affecting community resilience are still lacking. As I explained in my theoretical model, they can be called *enabling factors* or *hindering factors* depending on their ability to facilitate or obstruct resilience capacities. Based

on the Chilean experience, I propose the existence of four general factors: economic, physical, social and political.

a) Economic

Employment and income are the main economic capacities affected by natural disasters. More specifically, in Chile many fishing villages were swept away by the waves of the tsunami and families lost their main source of livelihood, fishing. A good example of an enabling factor was identified in the IFRC's response and the recovery operations in the aftermath of the 2004 Indian Ocean tsunami. This operation assisted families in diversifying their livelihoods through training and provision of resources for farming, animal husbandry and carpentry. In a study carried out after the programme finished, families reported that their activities in entrepreneurship and alternative employment increased in strength. Therefore, economic capacities were strengthened after the disaster and the IFRC's operation was an enabling factor that contributed to it (IFRC, 2012, p.10).

Although the IFRC experience was an external factor that contributed to enhancing economic resilience capacities, I also argue that external aid does not always lead to positive results, and that sometimes it can become a hindering factor. For instance, when Hurricane Floyd hit North Carolina in 1999, some members accused the agencies in charge of emergency assistance of being unfair in their distribution of aid or of establishing the wrong priorities (Moore et al., 2004, p.211). Consequently, in this situation the unequal distribution of resources can negatively affect the internal dynamic of a community and damage resilience capacities such as trust.

b) Physical

In terms of the physical factors, displacement seems to be one of the most important hindering factors that could affect community resilience. Natural disasters have a considerable impact on the built environment, and the destruction of houses is one

of the most visible effects, causing a high number of homeless people (Felix et al., 2013, p.136). Homeless people are forced to move to temporary shelters that often are located away from their original communities, losing social networks and sense of community. The 1995 Kobe earthquake experience showed that shifting old residents who had lived together for many years and had strong community bonds to temporary shelters posed a threat to the community links (Shaw and Goda, 2004, p.22).

Felix et al. (2013, p.136) state that providing temporary housing seems to be one of the most decisive tasks because it allows people to return to normal. Nevertheless, they also argue that this decision is often criticised for being unsustainable and culturally inadequate. This could affect how residents interact, which could in turn impact not only on the climate of the neighbourhood but also on the health and well-being of inhabitants (Spokane et al., 2013, p.896). Therefore, implementing housing programmes that respect local reality can be an enhancing factor that could promote resilience capacities. A complete understanding of the context of the disaster area is key to providing adequate housing solutions (Felix et al., 2013, p.139).

c) Social

Regarding hindering social factors, looting can be one of the most negative factors affecting resilience capacities, trust, in particular. Although some authors claim that looting is a rare phenomenon in natural disasters (Dynes, 2005, Quarantelli and Frailing, 2007), the Chilean experience shows the contrary. In Concepcion city, looters stormed several small shops and supermarkets in search of food and supplies (Dussaillant and Guzman, 2014, p.808). This situation was also reported in other disasters, including the 2005 earthquake in Pakistan (Aghabakhshi and Gregor, 2007, p.349) and the 2010 Haiti earthquake (BBC, 2010b).

Conversely, volunteerism can be an enabling factor which can enhance community resilience capacities, especially solidarity, cooperation and trust. The link between

volunteerism and community resilience was identified by the United Nations Volunteers programme (UNV, 2012, p.11) stating that ‘volunteer involvement helps ensure that fundamental values of solidarity and a sense of common destiny, values that add immeasurably to the resilience of communities’. In the 2010 Chile earthquake and tsunami was observed spontaneous volunteering to support communities. For instance, thousands of young people organised the distribution of food, water and provided medical help to people (BBC, 2010c). Other forms of altruism were also common during the disaster. The solidarity campaign ‘Chile Ayuda a Chile’ (‘Chile helps Chile’) on the television, is an example of this. The campaign rose in total over 65 million US dollars to help people affected by the catastrophe (LaTercera, 2010).

d) Political

In terms of the political factors, a top-down approach can preliminarily be identified as the main hindering factor and a bottom-up approach as an enabling one. For instance, a research carried out in Sri Lanka after the 2004 Indian Ocean Tsunami found that top-down and bottom-up are the key approaches operating among agencies within the aid community (Dominelli, 2015, p.660). Nevertheless, the same author also states that villagers preferred bottom-up, egalitarian approaches over top-down ones (Dominelli, 2015, p.660). In Chile, a similar situation was observed. A top-down approach was implemented, especially in the recovery period in which communities were not taken into consideration in the decision-making process regarding the housing reconstruction. However, people affected by the disaster reacted against the government and a new social movement called the ‘National Movement for Just Reconstruction (MNRJ)’ emerged. The group advocates for a participative, just and democratic reconstruction in the country.

Adopting a bottom-up approach could benefit both communities and agencies. On the one hand, it could lead to an increase in community self-efficacy and empowerment that could speed recovery. On the other hand, social and cultural

issues are far more likely to be addressed in rebuilding process which could promote the sustainability of governmental initiatives (Spokane et al., 2013, p.895). Finally, involving a community in the decision-making process can also increase the sense of community since people work as a cohesive group to return to normal (Aghabakhshi and Gregor, 2007, p.353).

After analysing the external factors, the last part of this chapter examines the second key component of community resilience: resilience capacities.

3.4.2. Resilience Capacities

As I noted in Chapter 2, several capacities have been proposed in disaster field. In order to select the resilience capacities for my theoretical model, I analysed the capacities that the academic and non-academic frameworks include, depending on their applicability to the Chilean context. Furthermore, I established six criteria to assess the suitability of these capacities for the Chilean context: the capacities and resources need to be sufficiently specific, measurable, comparable, relevant and context-appropriate. Finally, from the variety of capacities that I observed in the literature, I selected four main capacities, including social; economic and structural; planning; and information and communication. I also identified a set of eighteen specific capacities illustrate in Figure 3.4.

In the following section, I present the capacities which can contribute to a better understanding of community resilience in the context of natural disasters at a specific level. Nevertheless, as I mentioned above, there is not much evidence of the role of these capacities in Chile. For this reason, I base my analysis on a few studies available in the field, especially for Asia and developed countries which, although may not applicable to the reality of Chile, provide a baseline to understand resilience in operational terms.

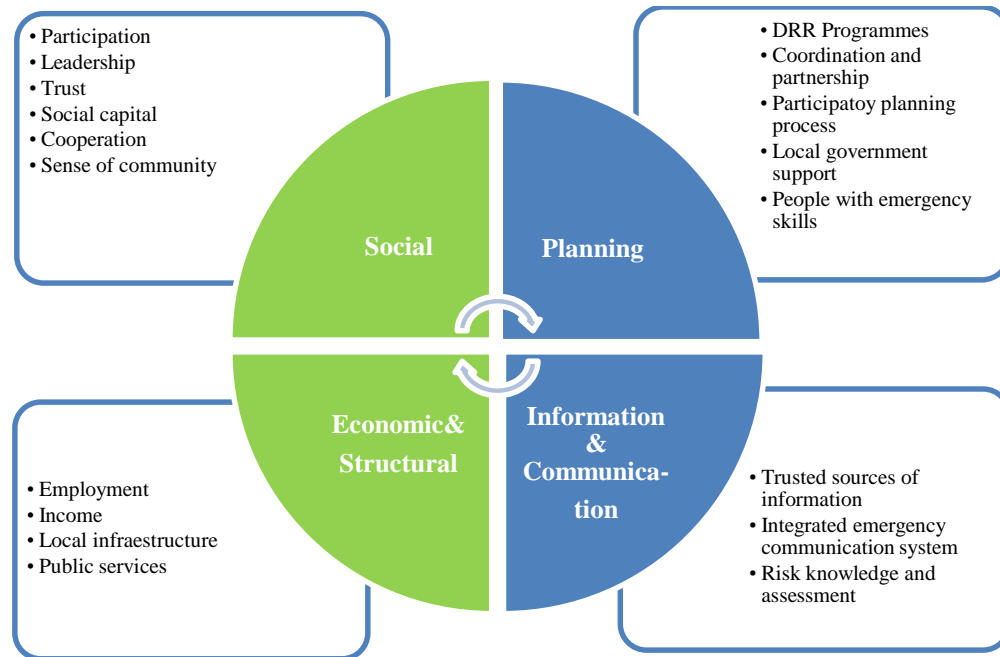


Figure 3.4. Resilience capacities identified in the theoretical model

a) Social capacities

Social capacities encompass those intangible community resources that are useful for coping with and recovering from disasters, including participation, leadership, trust, social capital, cooperation, and sense of community.

Most of the academic and non-academic models recognise the importance of social capacities in measuring community resilience, although it is more emphasised in non-academic ones. In academic models, the development of social capacities is not extensive and the identified capacities vary depending on the understanding of ‘social capacities’. For example, in Bruneau et al.’s model (2003), which is based on engineering principles, social capacities refer to resources related to emergency and planning such as ‘avoidance of casualties’ and ‘plan and resources to meet community needs’. From an ecologic perspective, Boon et al.’s model (2012) considers social capacities inside the ‘community mesosystem’ dimension, though

the analysis is limited only to social networks such as sporting and volunteer linkages. This restriction and the scarce development of social capacities can also be observed in other academic models (e.g., Landau, 2007; Sagala et al., 2009; Tobin and Whiteford, 2002). The exception to this can be found in Cutter et al.'s model (2008b), which proposes a more elaborate system of social capacities integrated by social networks, community values-cohesion, faith-based organisations and demographics components. However, the most advanced system of social capacities is included in Norris et al.'s model (2008) which identifies the reciprocity, social capital, cooperation, participation, leadership, sense of community and attachment to place as the most relevant capacities that due their nature are suitable for measuring community resilience in the context of Chile.

Most non-academic frameworks basically identifies the same social capacities suggested by Norris et al. (2008) (e.g. CCE, 2000), while others focus on some specific resources such as participation and social networks (e.g. TRI, 2012; Twigg, 2009, UNISDR, 2012b; U.S.IOTWS, 2007). Lastly, another social resource which has not been used in any model yet but would be extremely relevant for the context of Chile is trust. In the following section, I present the social capacities for measuring community resilience in the context of Chile.

- *Participation*

In my research, I understand participation as the engagement of community members in social organisations and community activities motivated by collective or personal interests. This resource has not been explored extensively in disaster research. However, I consider it to be an essential capacity for community resilience. Twigg (1999, p.51) points out that community-based activities and social organisations are deeply rooted in the society and culture of an area, enabling people to express their real needs and priorities, allowing problems to be defined correctly and responsive measures to be designed and implemented. The existence of community-based organisations enables people to respond to emergencies rapidly,

efficiently and fairly (Twigg, 1999, p.51). The role of community organisations in an emergency was identified in a survey carried out after the 2000 water-borne disaster in Walkerton, United States. After this disaster, one-third of the people involved in community activities indicated that they relied on these organisations for assistance during the crisis (Murphy, 2007, p.309). Community organisations are also relevant during the recovery period. For instance, after the 1994 Northridge earthquake in California, Bolin and Stanford (1998, p.22) found that community organisations provided assistance to vulnerable households with unmet needs. Similarly, in the face of the 1995 Kobe earthquake in Japan, community organisations were crucial not only for the survival but also for the recovery of communities (Shaw and Goda, 2004, p.21).

Apart from the crucial role of community organisations, some researchers have focused on the impact of disasters on the structure and functioning of organisations. The Disaster Research Centre (DRC) typology was developed to explain the organised behaviour in disasters. This typology has two main dimensions: structure and tasks. Quarantelli (1994, pp.2-3) assumes that all organised behaviour uses either old or new social structures and undertakes either old or new tasks. By cross-tabulating the two dimensions (tasks and structures) four groups can be identified: Established (Type I); Expanding (Type II); Extending (Type III); and Emergent (Type IV) (Quarantelli, 1994, p. 2 and 3). The first three groups have pre-disaster existence, while the last one does not have it. These groups can be explained as follows:

- *Established organisations* continue to perform the same tasks that they would undertake in a non-disaster context (Murphy, 2007, pp. 304-305). They also become involved in disaster response in the same authority relationships which existed prior to their response (Dynes, 2005, p.27).
- *Expanding organisations* increase in size and undertake new activities during disasters (Murphy, 2007, pp. 304-305) but continue with the same authority relations (Dynes, 2005, p.37).

- *Extending organisations* have a pre-disaster existence, but extend their activity by dealing with realistic disaster tasks. For instance, a church group takes responsibility for a temporary feeding operation. However, the pre-disaster authority relationship continues (Dynes, 2005, p.27).
- *Emergent organisations* are groups that develop to meet the disaster needs perceived to be unmet by other respondents. These groups exhibit both new tasks and structures (Murphy, 2007, pp. 304-305).

Finally, the Disaster Research Centre (DRC) typology can be useful to understand the role of community organisations, especially the emergence of new organisations after the 2010 Chile earthquake and tsunami such as ‘The National Movement for Just Reconstruction’ (MNRJ) that I have mentioned above. This group brings together more than 25 organisations nationwide and it was created with the purpose of channelling the housing demands of the people who lost their houses after the disaster.

- *Leadership*

The role of community leaders was identified as crucial to managing emergency and recovery periods (Dynes, 2005; Ganapati, 2012; Nakagawa and Shaw, 2004; Shaw and Goda, 2004). Leadership in extreme contexts is defined as:

Adaptive and administrative processes of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives and purpose under conditions where an extensive and intolerable magnitude of physical, psychological, or material consequences may exceed an organisation’s capacity to counter and occur to or in close physical, social, cultural, or psychological proximity to organisation members (Hannah et al., 2009, p. 913).

The results of a case study conducted in the Nishi Suma area affected by the 1995 Kobe earthquake in Japan show that one of the reasons why local people are so effective in rescue activities is the *leadership* within informal and formal community-based organisations (Shaw and Goda, 2004, p.21). The role of

community leaders has also been found to be the most effective in utilising social capital in the recovery process and in facilitating collective decision-making (Nakagawa and Shaw, 2004, p.5). In Chile, the media emphasised the role of community leaders after the disaster. They stood as an intermediary between the communities and the government, formally channelling community demands and necessities. Furthermore, it was relevant the emergence of new leaders who had never performed community roles before the disaster (Valenzuela, 2010).

Although the role of community leaders has been recognised as relevant, there is little literature extensively examining the characteristics of leadership in extreme contexts, and unfortunately, the available literature is based on rare cases (Hannah et al., 2009, p.914) that may not be applicable to the Chilean context. This represents an obstacle to the analysis of the role of community leaders in the Chilean context. Nevertheless, this research offers new insights into the role of leadership in disaster contexts.

- *Trust*

Trust can be defined as ‘the expectation that arises within a community of regular, honest, and cooperative behaviour, based on commonly shared norms, on the part of other members of the community’ (Fukuyama, 1995, p.26). Scholars pointed out that natural disasters can have a significant influence on trust (Dussailant and Guzman, 2014; Fleming et al., 2014; Toya and Skidmore, 2014; Veszteg et al., 2015). In fact, natural disasters appear to be a major determinant of changes in trust. This was the main conclusion of a panel data analysis carried out in many countries over a number of years by Toya and Skidmore (2014, p.274). The authors found that overall societal trust increases in countries that experience significant disaster events, particularly storms. Similar results were found by Cassar et al. (2011, p.1) in the context of 2004 Asian tsunami. In particular, researchers concluded that individuals affected by the disaster are substantially more trusting and trustworthy. Some of the benefits of trust include creating and consolidating safety nets in the

medium term, and reinforcing institutions and the effectiveness of long-term socioeconomic recovery programmes (Fleming et al., 2014, p.1484). Even though trust is a crucial factor in dealing with natural disasters, it has not been identified as an important capacity in community resilience frameworks.

I believe it is important to mention that the literature recognises some external factors that can positively or negatively affect the trust of communities. Among the factors contributing to the increase in trust, Cassar et al. (2011, p.1) suggest that the help received from others - whether friends or institutional sources - made people trust more in the long term. Furthermore, gratitude or an increased expectation of needing others' help in the future may increase trustworthiness. Conversely, related to the conditions that can damage trust, Fleming et al. (2014, p.1483) identify: rivalry generated by disputes to obtain scarce relief and recovery resources; increased information asymmetries between neighbours (aftermath moral hazard); migration (movement between communities); and social displacement of people (movement within communities). In my research, I will explore the applicability of these conditions to the Chilean context.

- *Social capital*

In recent years, several publications have documented the role of social capital in coping with and recovering from natural disasters (Berke et al., 2008; Bhandari, 2014; Chamlee-Wright and Storr, 2011; Dynes, 2005; Hawkins and Maurer, 2010; Murphy, 2007; Patterson et al., 2010). For instance, Aldrich (2012) documents in his new book, *Building Resilience: Social Capital in Post-disaster Recovery*, the critical role of social capital in the ability of communities to withstand and recover from disasters.

There are numerous examples of communities with strong networks facing disasters in a better way. Nakagawa and Shaw (2004) explore the vital role of social capital in managing and recovering from the earthquakes in Gujarat, India and Kobe, Japan.

Similarly, in the context of the 1934 KathmanduValley earthquake in Nepal, Bhandari (2014) found that people relied on social capital at different stages of the earthquake response and recovery. Likewise, a study carried out after Hurricane Katrina concluded that residents, especially those with low incomes, relied on all levels of social capital for individual, family, and community survival (Hawkins and Maurer, 2010). Unfortunately, there is no evidence about the role of social capital in coping with disasters in Chile.

There are three specific forms of social capital identified in the literature: bonding, linking and bridging. Each type is characterised by variation in the strength of relationships and composition of networks (Aldrich and Meyer, 2015, p.5). Bonding social capital refers to horizontal relationships amongst the members of a network who are similar on some key dimension such as socioeconomic status. They tend to reinforce exclusive identities and homogeneous groups (Putnam, 2000, p.22). Some examples of bonding include family, close friends and neighbours. Bridging social capital are the relationships amongst people who are different in terms of socio-demographic characteristics such as age, ethnicity, class, and education (Szreter and Woolcock, 2004, p.655). Linking social capital refer to vertical relationships with institutions and individuals who have relative power over them (Szreter and Woolcock, 2004, p.655). In my research, I explore these three types of social capital in order to observe the role played in coping with and recovering from the Chilean disaster.

- *Cooperation*

Cooperation is usually understood as mutual aid, solidarity and shared activities for mutual benefit. Several researchers pointed out the crucial role of cooperation in the aftermath of natural disasters (Aldrich, 2011; Berke et al., 2008; Bhandari, 2014; Brouwer and Nhassengo, 2006; González-Muzzio, 2013; Minamoto, 2010; Moore et al., 2004; Murphy, 2007; Nakagawa and Shaw, 2004; Shaw and Goda, 2004).

Disasters can have a positive impact on cooperation. This was demonstrated in a study conducted after the 2004 tsunami in the Ampara District, Sri Lanka. Research showed that people helped each other more and cooperated more with social organisations and other communities right after the disaster struck (Minamoto, 2010, p.553). On the other hand, there is evidence that connects social capital and cooperation. Bonding social capital have been identified as relevant in the cooperative activities carried out after disasters. For instance, Moore et al. (2004) observed the innumerable accounts of ‘neighbours helping neighbours’ in the aftermath of Hurricane Floyd, United States. Other examples of cooperative activities and strategies applied by neighbours were clearly identified in the context of 1995 Kobe earthquake. The main actions in this disaster included rescue efforts, extinguishing fires, evacuation, the establishment of community kitchens and the provision of night guards (Nakagawa and Shaw, 2004, p.16). Likewise, in the context of 2004 tsunami in Thailand other actions were observed such as debris removal, beach clean-up, retrieval, repair of damaged fishing gear and temporary housing repair (Berke et al., 2008, p.310). Finally, a study carried out in Chile identified similar results, community kitchens and night guards being the main strategies that neighbours in San Pedro de la Paz city applied (González-Muzzio, 2013).

- *Sense of community*

The sense of community is the last social capacity I will analyse. The sense of community refers to an attitude of bonding (trust and belonging) with other members of one’s group or locale, including mutual concerns and shared values (Perkins et al., 2002).

Little attention has been paid to the role of this capacity in coping with and recovering from natural disasters. Only two models of community resilience mention this capacity, specifically Norris et al. (2008) and The Centre for Community Enterprise (2000). There is not much research on this capacity; only

one study carried out in the aftermath of Hurricane Katrina is relevant to my thesis. Based on interview data and survey collected from residents who returned to New Orleans after the storm and from former New Orleanians who were evacuated to Houston but did not return, Chamlee-wright and Storr (2009) found that the sense of place was an important motivator for early returnees. The results suggested that returning residents believed that New Orleans in general (and their Ninth Ward neighbourhoods in particular) possessed a unique bundle of characteristics that, when taken together, cannot be found or replicated elsewhere (Chamlee-wright and Storr, 2009). Therefore, according to this study, the sense of community affects the decision to return to the same place after the impact of natural disasters. This finding is relevant to my thesis, especially in the situation of communities which were displaced from their neighbourhoods after the impact of natural disasters.

After analysing the main social capacities, in the next section I introduce the other capacities of my theoretical model: economic and structural, planning, and information and communication.

b) Economic and structural capacities

Economic and structural capacities encompass those tangible resources that are useful for coping with and recovering from hazards, including employment, income, local infrastructure and public services.

Research evidence has shown that poor people are two times more exposed to natural disasters than non-poor people (Kim, 2012), and consequently, the negative impact of natural disasters is much stronger on vulnerable communities than on non-vulnerable ones. The severity of the impact of natural disasters depends in part on the economic capacity of a community to cope with the negative consequences of these hazards. Therefore, economic and structural capacities are significant for understanding the process of community resilience.

In the academic approach, Cutter et al. (2008b) and Norris et al. (2008) proposed a broad variety of economic resources suitable for measuring community resilience. On the one hand, Cutter et al. (2008b) developed a specific level of measuring, using capacities such as employment, the value of poverty, wealth generation, and municipal finance. On the other hand, Norris et al. (2008) proposed a general level of measuring that includes capacities such as fairness of risk and vulnerability to hazards, level and diversity of economic resources, and equity of resource distribution. The last two capacities, diversity and equity, are relevant for the analysis of community resilience in the context of Chile because the scarcity of resources, that is common in developing countries, can lead to several conflicts regarding their distribution.

In the case of non-academic frameworks, most of them emphasised the importance of the economic resources in order to promote community resilience. Specifically, the IFRC (2012) and CCE (2000) frameworks highlighted the socioeconomic factors of communities, including the income and employment as the main economic resources. In a study carried out by the IFRC (2012) in communities affected by the 2004 Indian Ocean tsunami, the greatest emphasis was placed on the importance of employment and income as the main economic assets. Diversified and flexible employment capacities are crucial to overcome the economic losses in the aftermath of disasters. For instance, communities located in coastal areas that rely only on fishing for their livelihood find it difficult to recover due to the lack of diverse employment capacities. This situation was observed in several fishing villages in Chile. Therefore, diverse sources of income and flexible employment capacities could help communities adapt to the post-disaster conditions and contribute to increasing resilience.

Nonetheless, economic resources are not sufficient. Some structural resources are also necessary. Non-academic frameworks pay special attention to structural resources such as emergency infrastructure and local services for coping with the emergency after a disaster (e.g. IFRC, 2012; The Interagency group, 2009; The

Torrens Resilience Institute, 2012; The U.S. IOTWS, 2007; UNISDR, 2012b). These resources include local infrastructure such as community centres, water supply, power system, disaster resistance housing and tsunami barriers. Furthermore, structural resources comprise the access to public services such as fire and rescue services, military and security services, health services, schools, transportation and communication. These resources are crucial for coping with disasters, reducing the damage and promoting community resilience in the long term. For example, in the context of the Chilean earthquake, the schools and community centres were used as evacuation and emergency operation centres in order to provide assistance and shelter to the victims, when the City Councils' building were destroyed.

c) Planning capacities

Planning capacities encompass the planning instruments and skills that are useful for coping with and recovering positively from hazards, including disaster risk reduction programmes, people with useful skills in emergency response and recovery, coordination and partnership, local government support and participatory planning process.

Planning capacities are emphasised more on non-academic frameworks than on academic ones. In the academic approach, only Cutter et al. (2008b), and Tobin and Whiteford (2002) propose a set of resources in this area. They direct their attention to the importance of having hazard mitigation programmes and emergency plans (Cutter et al., 2008b), as well as to the relevance of political factors in the planning process (Tobin and Whiteford, 2002). By contrast, in the non-academic trend, the planning capacity was emphasised by most of the institutions (CARRI, 2008; The Interagency group, 2009; The Torrens Resilience Institute, 2012; The U.S. IOTWS, 2007; UNISDR, 2012b). The importance of having a disaster reduction plan was the common resource found in the majority of non-academic frameworks, which identifies the following resources as the most relevant ones for the success of the

planning process: community participation (CCE, 2000; Interagency group, 2009; Torrens Resilience Institute, 2012; UNISDR, 2012b; U.S. IOTWS, 2007); coordination between institutions and communities (Interagency group, 2009; UNISDR, 2012b; U.S. IOTWS, 2007); and support from local governments (CARRI, 2008; UNISDR, 2012b). Likewise, technical and operational resources such as people with useful skills in a disaster context (Torrens Resilience Institute, 2012; UNISDR, 2012b) and access to financial support (The Interagency group, 2009; UNISDR, 2012b) were identified as crucial resources for the promotion of community resilience. Consequently, the final planning capacities of my theoretical model have mainly derived from this non-academic trend due to the comprehensive system of planning developed capacities and their pertinence to the Chilean context.

In terms of the specific planning capacities that I use in my theoretical framework, I propose that disaster risk reduction programmes at the local level are a fundamental capacity for reducing the impact of natural disasters and promoting resilience. Unfortunately, the lack of planning instruments for coping with natural disasters was one of the main causes of the problems emerging after the 2012 Chile earthquake and tsunami. As I will explain in Chapter 5, there were no effective local plans for reducing risks in the communities, and therefore, the institutions were not able to coordinate efficiently the emergency and recovery period. For this reason, I also identify coordination and partnership as important planning capacities.

Participatory planning process is another crucial planning capacity that can be useful for the sustainability of disaster risk reduction plans; programmes of the local capacities and knowledge in order to empower communities in the promotion of their resilience. Taking advantage of the local capacity, namely, the knowledge of people with useful skills in emergency response and recovery, could be a relevant planning capacity to explore in the Chilean disaster.

In a disaster context, it is also required to have financial instruments that can support the development of disaster risk reduction plans for the long term. Therefore, local

governments play the most important role in ensuring permanent investments in disaster risk reduction plans in order to mitigate the impact of future disasters. The local government's support would be a relevant planning capacity not only for financial investment but also for coordinating the actions of institutions, and ensuring the participation of communities and local organisations.

d) Information and communication capacity

This capacity encompasses the information and communication resources that are useful for coping with and recovering from disasters, including trusted sources of information, integrated emergency communication system and risk knowledge and assessment.

The importance of having information and communication capacities for measuring community resilience is recognised by the majority of non-academic frameworks, while in the academic approach, only Boon et al. (2012), Cutter et al. (2008b), Norris et al. (2008) and identified capacities in this area. In general, in the academic models, scholars emphasise the role of media (Boon et al., 2012; Norris et al., 2008); trusted sources of information (Norris et al., 2008); and the local understanding of risk (Cutter et al., 2008b). In the non-academic models, the knowledge and assessment of risk are the most important resources to reduce the impact of natural disasters. Furthermore, having an effective communication system, especially an early warning system, is recognised as a vital resource for the emergency period (The Interagency group, 2009; UNISDR, 2012b; U.S. IOTWS, 2007).

After analysing the information and communication capacities in academic and non-academic models, I selected three specific capacities that I consider to be suitable for Chile. From the academic models, I used the resources proposed by Norris et al. (2008), namely the resources linked to trusted sources of information. From the non-academic ones, I included the risk knowledge and assessment, as well as the

integrated emergency communication system (The Interagency group, 2009; UNISDR, 2012b; U.S. IOTWS, 2007).

Regarding risk knowledge and assessment, a community which is well-informed about the risk exposure to natural disasters is a necessary capacity because it could reduce the loss of human lives and mitigate the economic costs caused by natural disasters. In this regard, permanent risk assessments that include the entire community are essential for promoting community resilience and reducing the impact of disasters. Furthermore, developing an integrated emergency communication system that involves the participation of local governments, private institutions and community members could also be relevant for mitigating the impact of disasters. Unfortunately, the communication system failed in the 2010 Chilean disaster due to the ineffective tsunami warning system which caused the death of people, as I mentioned in Chapter 1. Finally, this communication system also requires the responsibility of media and of other sources of information for providing accurate and reliable information in the emergency and recovery periods.

Conclusions

In this chapter, I aimed to develop a theoretical model of community resilience appropriate for the Chilean context. This model answers theoretically my research question; it sets the baseline to understand the impact of the 2010 Chile earthquake and tsunami on community resilience. This chapter is integrative because developing a model of community resilience implies addressing the resilience capacities and external factors which are the first and second research objectives respectively. In Chapter 9, I will develop an integrated model of community resilience that will include the theoretical components of this chapter and the empirical evidence of my case study.

The theoretical model developed in this chapter revealed the dynamic nature of resilience and how different components and interactions merge after the impact of a disaster. Resilience capacities and external factors are the main components of the resilience process. On the one hand, the role of resilience capacities, including social, economic and structural, planning, and information and communication show that communities have the potential for resilience. Resilience is an inherent capacity which suggests that communities are the centre of the resilience process and, therefore, empowering them should be mandatory. On the other hand, external factors can have a dual role, they can enhance or undermine community resilience. This reveals that resilience is not a pure positive capacity, resilience can lead to *growth* or *decay* as I showed in this chapter. The impact of hindering factors such as looting, top-down approach and displacement show the *dark side* of resilience which will be better understood in the following chapters.

This chapter again points to the importance of focusing on capacities as the core of community resilience. The attributes of these capacities, including robust, redundant, rapid, diverse, equitable and well located, provide more insights into the nature of resilience. Yet, these attributes are not enough to answer the research question. The way in which capacities interact with external factors is the crucial

point to fully understand how disasters impact upon community resilience. More interactions between capacities and external factors, inside and outside the community, will be revealed after analysing the El Morro case study.

In the next chapter, I present the methodology that I implemented in order to test the theoretical model in the El Morro case study.

CHAPTER 4

RESEARCH METHODOLOGY

Introduction

The next stage is to test the theoretical model of community resilience developed in the previous chapter in the Chilean context. In this chapter, I present the methodology that I used to test the model which is in line with my theoretical model and the main principles of community resilience. As I have argued that contextualisation is an important principle of community resilience, I chose the methodology that is the most appropriate not only for my research purpose but also for the context of my case study, especially for my research participants.

The first section outlines the research aims and the main theoretical propositions of my thesis which guided the fieldwork process. I then explain the epistemological approach of my research, arguing that interpretative and phenomenology approaches are the most suitable for my research purpose. In the second section, I present my case study research strategy and I examine four rationales that justify my decision to implement a holistic single-case design. However, I also consider the difficulties and limitations of this design and the strategies that I used in order to reduce these limitations and maximise the quality of my design. Finally, in the third section, I explain the process of data collection, the research methods and the analysis.

4.1. Theoretical propositions

In the following section, I present the main theoretical propositions behind each research objective and discuss how I addressed them during my fieldwork.

4.1.1. Addressing research objective 1

To analyse the resilience capacities that contribute to coping with and recovering from natural disasters in the Chilean context.

Community resilience involves a set of capacities or resources that help communities cope with and recover from hazards or disturbance. My theoretical model includes four main capacities (social, economic and structural, planning, information and communication) and eighteen specific capacities (see Chapter 3 for further details). The final capacities of community resilience are the result of the combination of the theoretical model and empirical data from the El Morro case study, which brings a clear understanding of the specific capacities that contribute to coping with and recovering from natural disasters (see figure 4.1).

4.1.2. Addressing research objective 2

To analyse the external factors that enhance or undermine community resilience in the Chilean context.

After identifying the resilience capacities, I analyse the external factors that affect either positively or negatively these capacities. While conducting the literature review, I observed some general factors, namely, economic, physical, social and political (see Chapter 3 for further details). The final external factors are the result of the factors identified in my theoretical framework and empirical data obtained from the El Morro case study. This contributes to a better understanding of the specific external factors that can enhance or undermine community resilience in the context of natural disasters (See figure 4.1).

4.1.3. Addressing research objective 3

To develop a model suitable for analysing community resilience in the context of natural disasters in Chile.

At the theoretical stage of my thesis, in Chapter 3, I designed a theoretical model of community resilience. My next stage was to test this theoretical model in the fieldwork. The focus of my fieldwork was the interactions among the main components of the theoretical model which are *capacities* and *external factors*. I address these components in the first and second research objectives respectively. Therefore, these objectives bring the most important data for testing the theoretical model. However, during the fieldwork, I also noticed the possible existence of new components and interactions. This was important because it reduced the bias in my research and enabled me to have an open attitude in situations in which I got contrary findings.

The design of an integrated model of community resilience combines the components of both the theoretical model and empirical data which allows me to fully accomplish my third objective. This integrated model represents the consolidation of my research and the accomplishment of the purpose of my thesis. Figure 4.1 shows how the theoretical and empirical parts of my investigation link together in producing the integrated model of community resilience.

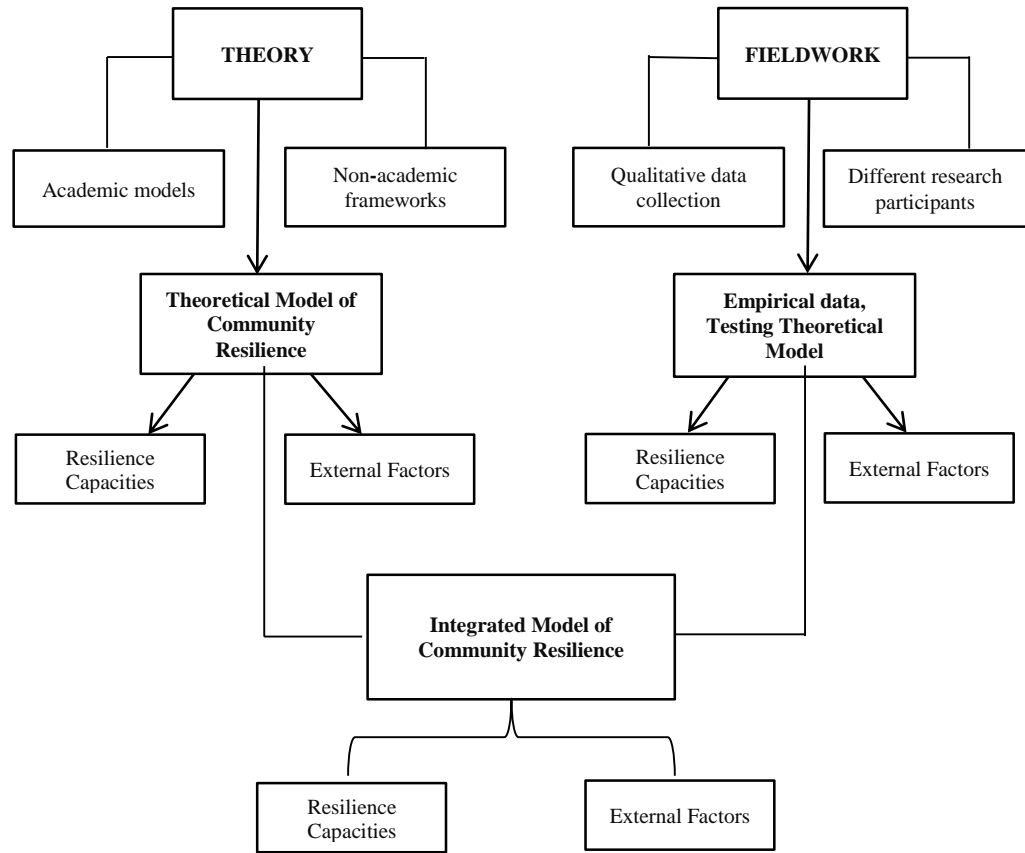


Figure 4.1. The rationale for designing the integrated model of community resilience

This table below illustrates the rationale of my fieldwork, presenting my research objectives, with their respective fieldwork objectives, and specific focus during the fieldwork. This summary was useful in keeping my research aims focused during the process of fieldwork in Chile.

Table 4.1. Summary of research objectives, fieldwork objectives, and specific focus during the fieldwork

Research Objectives	Fieldwork Objective	Focus on
1. To analyse the resilience capacities that contribute to coping with and recovering from natural disasters in the Chilean context.	To identify those capacities or resources that helped El Morro cope with and recover from the 2010 Chile earthquake and tsunami.	<ul style="list-style-type: none"> - Capacities or resources: social, economic and structural, planning, information and communication. - Other capacities or resources that could emerge in the fieldwork.
2. To analyse the external factors that enhance or undermine community resilience in the Chilean context.	To identify those external factors that strengthened or weakened the resilience capacities of El Morro in the face of the 2010 Chile earthquake and tsunami.	<ul style="list-style-type: none"> - External factors: economic, political, physical and social. - Other external factors that could emerge in the fieldwork.
3. To develop a model suitable for analysing community resilience in the context of natural disasters in Chile.	To test the theoretical model of community resilience in the El Morro case study.	<ul style="list-style-type: none"> - Components and interactions specified in the theoretical model. - Particular attention to the interactions among the main components of community resilience: capacities and external factors. - Other new components and interactions that could emerge in the fieldwork.

After presenting the theoretical rationale of my research that I applied during the fieldwork, in the next section, I introduce the epistemological approach of my thesis.

4.2. The epistemological approach of my research

The approaches I used in my research were *interpretivism* and *phenomenology*. Interpretivism is essentially a reaction against the idea that you can use the same research methods and paradigms in the social sciences as those in the natural sciences (Willis et al., 2007, p.54). This paradigm emphasises the human interpretation of the social world and the significance of both participants' and investigator's interpretations and understanding of the phenomenon being studied

(Ritchie et al., 2013, p.11). Whereas positivism looks for universal laws (Barbour, 2014, p.35), interpretivism looks for an understanding of a particular context (Willis et al., 2007, p.59). According to this approach, there is no ultimate objective reality, the world exists in the eye of the beholder (Barbour, 2014, p.35). My research aims to understand the phenomenon of resilience from the perspective of the communities which have been affected by natural disasters. In this context, the meaning and interpretations of people provide relevant knowledge about building resilience.

The interpretative approach has an inductive nature; this means that it moves from a set of specific observations to the discovery of a pattern that represents some degree of order among all the given events (Babbie, 2004, p.22). In my research, this inductive reasoning contributed to the design of my integrated model of community resilience, using the particular observations of my case study. My role as a researcher was crucial because in interpretivism, the researcher can construct meaning and interpretations based on those of participants (Ritchie et al., 2013, p.12).

The nature of my research led me to adopt this interpretative approach. A natural disaster is a sensitive issue and the role that resilience plays during the emergency and recovery periods has been scarcely studied from the perspective of participants. Even though different theoretical frameworks have been developed in the last decade, only a few of them take into account people's 'lived experiences'. These 'lived experiences' could be crucial to understanding the specific capacities that help communities survive and recover from natural disasters. Consequently, resilience frameworks that are more contextualised to the reality of communities could be elaborated.

Phenomenology is a supporting approach for interpretive research that I also applied in my study. Phenomenology is the study of the nature and meaning of things - a phenomenon's essence and the essentials that determine what it is (Saldaña, 2011, p.7). Phenomenology involves the in-depth exploration of experiences or texts to

clarify their essences. The essence of the phenomenon can be understood through the hidden meanings and the essence of the experience added to how participants make sense of them (Grbich, 2013, p.92). In my research, the phenomenon is resilience, and I examine the essence of this phenomenon through the analysis of the meaning of capacities that helped El Morro cope with and recover from the Chilean disaster. Furthermore, as I have explained throughout my thesis, the context is also crucial to understanding resilience because capacities and resources vary from one community to another. Furthermore, resilience is affected by external factors which shape the resilience experience in different ways. Therefore, resilience is a subjective and relative phenomenon. This illustrates the main focus of phenomenology which is the subjectivity and relativity of reality, and the need to understand how humans view themselves and the world around them (Willis et al., 2007, p.53).

Resilience is a phenomenon in which there is little in-depth data. Therefore, interpretivism and phenomenology paradigms could contribute to a better understanding of the phenomenon of resilience in the context of natural disasters in Chile, from the perspective of participants. Both interpretivism and phenomenology guide the methodological decisions of my research, namely, research strategy, sampling, data analysis, and data collection methods that I present in the following section.

4.3. Case study research strategy

The interpretivism and phenomenological paradigms, a *case study* is the most appropriate strategy for my research purpose. A case study is ‘an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident’ (Yin, 2003, p.13). There are specific reasons that led me to choose a case study strategy. According to Yin (2003, p.1), case studies are appropriate when the *how* and *why* questions are posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context. These criteria are applicable to my research for the following reasons:

- Firstly, the role of community resilience in coping and recovering from natural disasters is a *contemporary phenomenon* that has been a little studied. My research aims to provide a deep understanding of the phenomenon of resilience in a real-life context, specifically in a community that has been affected by a natural disaster in Chile.
- Secondly, the *how* and *why* questions deal with the operational links that need to be traced over time rather than mere frequencies or incidence (Yin, 2003, p.6). Therefore, it implies focusing on interactions and the processes of the phenomenon. My research centres on the links not only among the resilience capacities but also between these capacities and external factors. The observation of these relationships over time could contribute to a better understanding of *how* community resilience takes places after the impact of a natural disaster.
- Finally, *little control over the phenomenon* was another part of the rationale. On the one hand, the occurrence of natural disasters such as earthquakes and tsunamis cannot be controlled or manipulated. On the other hand, when I started my fieldwork, more than two years had passed since the disaster, and people were still in the recovery period. It was an ongoing process and, as a researcher, I had no control over the situation. Consequently, it was a context

where relevant behaviours could not be manipulated (Yin, 2003, p.8). Therefore, I had no influence on the strategies, resources and capacities employed in coping with and recovering from the Chilean disaster.

The context is especially relevant in case study research, which is in line with one of my main principles of community resilience, *contextualisation*. In case study research, the objective is to thoroughly understand and interpret the individual cases in their own special context (Aaltio and Heilmann, 2010, p.66). As Yin (2003, p.2) states, ‘you would use the case study method because you deliberately wanted to cover contextual conditions-believing that they might be highly pertinent to your phenomenon of study’. Consequently, how community resilience takes place in the context of natural disasters in Chile is covered in my research. These conditions were crucial to define the type of case study to apply in my research, a single case study, as I explain in the next section.

4.3.1. Single-case rationale

A holistic single-case was the design I selected in my research. Although a multiple case design may appear to be stronger than a single one (Yin, 2003, pp. 53-54), the purpose of my study makes a single-case approach more suitable. A holistic single-case design tends to examine the global nature of a case study organisation, programme, or site with a singular unit of analysis (Xiao, 2010, p. 867). According to Yin (2003, pp. 40-42), there are five circumstances where a single-case design is appropriate. Firstly, the single case is the critical case in testing a well-formulated theory. Secondly, the case represents an extreme case or a unique case. Thirdly, the single case is the representative or typical case. Fourthly, the single case-study is the revelatory case. The fifth rationale is the longitudinal case. My selection was based on four of these rationalities:

Firstly, El Morro case study represents an *extreme* or *unique case* because it was the only community in Talcahuano which completely survived the tsunami. No one died

in this community which survived at the top of a hill for five days without external help as authorities erroneously assumed that people had died. The absence of victims and the survival during these five days were the most remarkable facts that led me to choose El Morro. Furthermore, there is no evidence of a similar case in the literature, which makes this case even more unique.

Using an extreme case is highly recommended when having a very large number of cases (more than 20) in the study, and when it is not effective to present all the cases in a detailed fashion (Jahnukainen, 2009, p.378). In Chile, there were more than 100 communities affected by the 2010 Chile earthquake and tsunami, 45 of which being fishing villages. As the conditions and characteristics of these communities vary extensively, it would have been difficult to establish specific criteria for a multiple-case design. Moreover, the purpose of my research was not comparative and I did not intend to find a pattern of diversity. My aim was rather to analyse in depth the phenomenon of resilience. Hence, a single design, using an extreme case was the most appropriate for my research purpose. One of the advantages of using extreme cases is that the researcher can demonstrate more effectively the main points of the study, as well as explain the extreme outcomes, diverse solutions, and practices of case participants in a succinct fashion (Jahnukainen, 2009, p.378). Finally, I would not have had the resources and the time to analyse in-depth multiple cases. As Yin states (2003, p.47), to conduct a multiple-case study can require extensive resources and time beyond the means of a single student or independent research investigator.

Secondly, El Morro is a *critical case* in testing the community resilience framework. In Chile, El Morro has the reputation of being one of the communities that performed exceptionally well in the face of the disaster. Therefore, this community represents the purest or most clear-cut instance of the resilience phenomenon (Watkins and Gioia, 2015, p.62). El Morro could contribute to confirming, challenging or extending my resilience framework. In other words, the El Morro case study could be used to determine whether the propositions of my theoretical model are correct and to extend the knowledge of community resilience.

Furthermore, El Morro is a small-scale community, the level where community resilience is best understood as I explained in the second chapter. El Morro case study contributes to developing theory (Yin, 2003, p.40) and achieving a more in-depth understanding of the nature of the resilience phenomenon (Jahnukainen, 2009, p.378).

Thirdly, the El Morro case-study is a *revelatory case*. This situation exists when an investigator has an opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation (Yin, 2003, p.42). A natural disaster is not a phenomenon that occurs every day. In Chile, a disaster with the intensity of the 2010 earthquake and tsunami had not occurred since 1960. Therefore, analysing the phenomenon of resilience, in an extreme case such as the El Morro community, is an opportunity that only a few researchers have.

The last rationale is the *longitudinal case*, which means that the same single case is studied at two or more points in time (Yin, 2003, p.42). Although El Morro is not a longitudinal case per se, the data collected made a longitudinal analysis possible. I carried out the fieldwork in El Morro during the reconstruction period but, unfortunately, it was not possible for me to do a fieldwork during the emergency period. Despite this fact, I could collect information about the emergency period through other methods such as documentary sources, interviews, and social media. Even though data was not extensive, it provided enough evidence to describe this period. El Morro was one of the few communities that had data available for that period which is a factor that I also considered during the selection of my case study.

These four rationales were the main reasons to select El Morro as a single case study. Nevertheless, there were also pragmatic reasons regarding the feasibility of my research that are worth mentioning. The first reason was the close proximity to the field. El Morro is located in the same region as my hometown and, as I had direct public transport to El Morro, it was easy to reach the community. Using public transportation not only helped me easily access the community but also reduce the

costs of my fieldwork. The second reason was the access to data and research participants. As a social worker, I had previously participated in different social projects in my region. These projects helped me develop useful relationships with government officials and practitioners who provided me with valuable documentation and facilitated my access to the field. The last reason was my social work skills in dealing with people in crisis. During my professional career, I have supported vulnerable families, groups and communities through difficult times. More specifically, during one of my jobs in Chile, I worked with urban and rural communities affected by the 2010 Chile earthquake and tsunami. This practical experience gave me essential insights and skills to understand people in crisis.

4.3.2. Limitations of the single-case design

Although a single case was selected as the most appropriate design to address my research aims, it is important to mention the weaknesses of this approach and the way I counterbalanced them. Yin (2003, p.45) identifies two limitations. The first drawback is that, due to the holistic nature of single designs, the entire case study may be conducted at an abstract level, lacking any clear measures or data. Nevertheless, the nature of my research counterbalanced this limitation. Even though resilience has a holistic character, the analysis of the specific capacities was the measure that allowed me a better understanding of this phenomenon. Therefore, community resilience was not only examined holistically but also in operational detail (Yin, 2003, p.45). The second drawback is that the entire nature of the case study may shift, unbeknownst to the researcher, during the course of study (Yin, 2003, p.45). I overcame this limitation by clearly formulating my research aim and objectives from the beginning. Furthermore, during my fieldwork, the use of the case study protocol enabled me to maintain the orientation of my study.

Apart from the disadvantages associated with single-case designs, I also had to deal with the main criticism against the case study method - the *generalisation*. Case designs are typically criticised for their insufficient basis for scientific generalisation

(Yin, 2003, p.10). Nevertheless, the same author argues that case studies can be generalised to theoretical propositions rather than populations or universes. This is called *analytical generalisation*, which differs from the *statistical generalisation* used in experiments (Yin, 2003, p.10). Analytical generalisation refers to the use of a previously developed theory as a template with which to compare the empirical results of the case study (Yin, 2003, pp. 32-33). Theory development is an essential part of my research as it can be observed in the design of my theoretical model in the previous chapter. This was also one of my main rationales to select a single-case design. Therefore, analytical generalisation was possible in my study, namely through the use of an extreme and critical case to test my community resilience framework.

The pitfalls identified in using a single-case may affect the quality of my research. This is why Yin (2003, p.32) proposes the use of *validity* and *reliability* as criteria to maximise the quality of single-case designs which I explain in the following section.

4.3.3. Validity and Reliability

The quality of my research design was guaranteed by the application of validity and reliability tests. Yin (2003, p.32-33) identifies four main criteria: construct validity, internal validity, external validity and reliability. The author also proposes several tactics for dealing with these tests when doing case studies and the phase of research in which these tactics occur. In the following section, I summarise the specific tests and tactics that I applied in my study.

Firstly, construct validity refers to the establishment of correct operational measures for the concepts being studied (Yin, 2003, p.33). The specific tactics used in order to meet the construct validity were: the use of multiple sources of evidence, the use of different observers and the establishment of a chain of evidence. Only two of them were applied during the data collection phase. The use of multiple sources of

evidence encompassed the use of semi-structured interviews, observation, informal conversations, documentation and social media as I explain later in the chapter. Furthermore, comparing data from these different methods enabled what is called methodological triangulation (Denzin, 2009). My research also enabled the use of triangulation of sources, which means using different observers or interviewers to compare and to check the data collection and interpretation (Ritchie et al., 2013, p.358). In order to maintain a chain of evidence, I applied diverse procedures: making sufficient citation to the relevant portions of the case study database; indicating the circumstances under which the evidence was collected; following the procedures stipulated in the protocol; and linking the content of the protocol with my research objectives (Yin, 2003, pp. 98-99)

Secondly, internal validity refers to the establishment of a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships (Yin, 2003, p.33). Aiming to meet the internal validity, I applied *pattern-matching* and *explanation-building* in the data analysis phase, as I explain later in this chapter.

Thirdly, external validity is the criterion that establishes the domain to which the findings of a study can be generalised. As I previously discussed regarding the limitations of single-case designs, case studies rely on analytical generalisation rather than on statistical generalisation. In analytical generalisation, the investigator strives to generalise a particular set of results to some broader theory (Yin, 2003, p.37). In my research, I set out a specific theoretical model with which I will contrast my empirical results.

The fourth test is reliability, which tries to demonstrate that the operation of a study, such as data collection procedures, can be repeated with the same results (Yin, 2003, p.33). In order to achieve a high level of reliability, I used two specific tactics: a case study protocol and a study database. The case study protocol contains the research instruments, the procedures and general rules that should be followed in

using the instrument (Yin, 2003, p.63). Regarding the creation of a case study database, I used two separate collections: the data or evidentiary base, especially notes and documents, and the report of the investigator (Yin, 2003, p.94-98).

4.3.4 Research participants

In terms of research participants, I used a *purposive sampling*, a type of non-probability sampling in which the units to be observed are selected on the basis of the researcher's judgment about which participants could be the most useful or representative (Babbie, 2004, p.183). The sampling of my research included the relevant actors from the community, and public and private institutions in order to provide an overall perspective of the resilience phenomenon in El Morro (see Appendix 1 for the list of research participants).

It is important to note that, as communities play the most important role in building resilience in the face of natural disasters, a local perspective was necessary. Therefore, community members were the main research participants, namely formal and informal leaders as well as ordinary community members who, although do not perform any formal role in the community, are also essential for building resilience. The integration of ordinary community members provided me with a deeper understanding of the resilience phenomenon that sometimes differs from the perceptions of community leaders. Additionally, representatives from private and public institutions, such as NGOs, local government, emergency organisations, and research and academic institutions that were involved in the emergency and reconstruction periods were included. In brief, my research participants included municipal officers, NGO practitioners, relief workers, academics and community members (leaders and ordinary members). As I mentioned in the previous section, the use of different participants in order to compare their viewpoints enabled the triangulation of sources.

After presenting my research participants, I introduce the data collection process that I carried out in my thesis.

4.4. Data Collection

I conducted my fieldwork in Chile between November 2013 and May 2014, when El Morro was in the reconstruction period. The data collection process involved three main stages: preparation for the fieldwork, the pilot study and the application of research methods.

4.4.1 The preparation of the fieldwork

Key informants were contacted in order to organise my fieldwork and to identify the relevant research participants. I firstly approached municipal officers from Talcahuano City Council who worked during the emergency and reconstruction periods in El Morro. They provided me with the contact details of community leaders and other important actors that I had not considered in my initial design but who were enormously valuable for my study. At the same time, I contacted people from NGOs, emergency organisations, and academic institutions in order to schedule the application of interviews.

4.4.2 Pilot study

The pilot study was the second stage of the data collection process. I carried out the pilot study between November 2013 and December 2014. The purpose of this strategy was to revise the research design, particularly, the data collection methods. I conducted 8 semi-structured interviews with different types of participants. Having a variety of participants was useful to test my research instruments under different circumstances. Apart from the interviews, other instances also provided me with relevant information to consider during my fieldwork, namely field visits and informal conversations with municipal officers and community members.

The result of my pilot study contributed to refining my research instruments and to improving my initial strategy for approaching the community. Regarding interviews, I realised that the same format of questions was not applicable to all interviewees. For instance, some questions were formulated in a technical language that most people from the community were not able to understand. Therefore, I decided to adapt the interview schedule to the characteristics of participants. In practical terms, I applied a format with concise and simple questions to ordinary community members and community leaders. In the case of NGO practitioners, municipal officers and academics, I applied a more sophisticated interview in which the use of technical language in some questions was necessary in order to explore in-depth the topics of the interview. Apart from the format of the questions, I had to modify the structure of the interview by reducing the number of questions because my original schedule included several questions that required lengthy answers which could have taken more than one hour in some cases. I decided to group specific questions into general ones to cover all the areas of my study.

Field visits were enormously relevant during my pilot study. I visited the community in order to interview people and to familiarise myself with the community setting. Nevertheless, I did not expect these visits to have a significant impact on my methodological approach. My field visits consisted basically of walking around the community and observing the physical structure of the community such as housing, streets, local businesses, hills and shores. Unexpectedly, during these visits, people approached me and spontaneously shared their stories of the disaster. I noticed that some of these informal conversations differed from the perceptions of leaders and municipal officers. They provided me with relevant insights about some topics that I had not considered in my research, specifically the division of the community and internal conflicts. El Morro has a reputation as one of the most successful communities in dealing with the disaster; a peaceful and united community, and an example of resilience in the country. Nevertheless, some informal conversations refuted this idea.

I was also surprised that during my field visits, both before and after applying the interviews in the community, people wanted to have me involved in their lives; I was invited to have dinner or tea with them, depending on the time of day. I noticed that in this friendly atmosphere, people openly shared their experiences and perceptions with me. Unpredictably, I found myself in a situation considered to be an *incidental ethnography*. As Barbour (2014, p.156) states, in some settings, it is virtually impossible to generate interview data without engaging in such ‘incidental ethnographic encounters.’ El Morro was one of these settings; the culture and idiosyncrasy of El Morro made impossible to avoid these ethnographic encounters.

In conclusion, the results from my pilot study made me reconsider my methodological approach. I realised that an ethnographic work would be a more suitable methodology in my research. Nevertheless, due to limited time and resources, this was not possible because ethnography requires an in-depth immersion in the field, at least a year (Barbour, 2014, p.155). As an alternative to this, I decided to apply ethnographic methods such as observation and interviews, and I tried to spend as much time as I could in the field, taking advantage of the ethnographic encounters. Although this strategy did not make my research an ‘authentic ethnography,’ my work could be considered an ‘incidental ethnography.’

4.4.3. Application of data collection methods

The last stage of my data collection process was the application of research methods which took approximately five months. According to Yin (2003, p.14), case study inquiry relies on multiple sources of evidence, with data needing to converge in a triangulation fashion. The information received from different sources can be compared, which increases validity (Aaltio and Heilmann, 2010, p.67). The use of different methods in my research enabled *triangulation*, which helped me achieve a deep understanding of the community resilience phenomenon. I used interviews and observation as primary methods but I also included informal conversations, documentary sources and social media.

4.4.3.1. Semi-structured interviews

Interviews, especially thematic interviews, are the most common data gathering method for a case study (Aaltio and Heilmann, 2010, p.67), especially when researchers are interested in understanding informants' perspectives on their lives, experiences, or situations expressed in their own words (Taylor et al., 2016, p.98). Semi-structured interviews are based on the idea that the interviewees have a complex stock of knowledge about the topic under study (Flick, 2009, p.156). In my research, I argue that participants have knowledge about the phenomenon of resilience which is also in line with one of the principles I stated in the previous chapter proposing that 'communities are the centre of community resilience' and that, therefore, they should be seen as active agents and not mere victims (see p.67).

Regarding the design, semi-structured interviews encompassed a number of specific topics and predetermined questions that extensively covered the objectives of my study. The formulation of questions varied depending on the interviewees. For example, simple questions with words familiar to people were applied to community members, while participants from private and public institutions had the questions adapted to their respective positions. Therefore, different interview types were applied to the different categories of interviewees: municipal officers, NGO practitioners, relief workers, academics and community members (leaders and ordinary members) involved in the emergency and reconstruction periods in El Morro. In order to select the interviewees, I applied a *snowball* technique, which means that each person that was interviewed was asked to suggest additional people for interviewing (Babbie, 2004, p.184). This was especially useful to identify not only community leaders and other members of the community but also external actors which played an important role after the disaster. For instance, due to this technique, I was able to access relevant interviewees such as Mathilde, the researcher who was present in the emergency period in El Morro.

I conducted the interviews in a setting more convenient for the interviewees. My interviews with municipal officers, NGO practitioners, relief workers and academics were conducted in their workplace. On the contrary, in the case of community members, I conducted the interviews in their homes. The setting selected by interviewees provided a more comfortable and friendly environment where people could openly express their experiences and feelings about the disaster. Interviews lasted between 45 minutes and one hour and a half. Generally, the interviews with community members were long, while those with the rest of participants were short. A possible explanation could be that community members usually had more time to share with me, and their stories and experiences were so rich in details that they left no room for short interviews. In total, fifty-four interviews were conducted; all of them were recorded and transcribed. I also took notes during and after the interview about the environment and the behaviour of the interviewees.

4.4.3.2. Observation

Direct observation was an important source of evidence in my study. I applied this method at all the stages of my fieldwork. I wrote field notes during the whole process, both during the ongoing observation and after finishing my field visits, especially on the bus, journey that took approximately one hour and a half and allowed me to write down the results of my observation in the community. Conducting my interviews provided the perfect scenario to observe the dynamic of families of El Morro; I could observe the behaviours of people and the physical characteristics of the temporary houses. For example, I observed that all temporary houses I visited were very neat and tidy, with well-maintained interior decorations. This gave me insights about the sense of belonging present in the community despite the disaster.

I applied a flexible approach during the observation which allowed me to remain responsive to the process itself (Flick, 2009, p.308). This approach contributed to

observing other aspects of the community that were not covered by the interviews, including routines, social interactions, traditions and physical artefacts. I still remember when, during one of my field visits, I accompanied one of the interviewees to the bakery to buy bread for the ‘once’ (traditional Chilean name for ‘dinner’). She suffered from depression after the disaster but she told me that going to the bakery every day made her feel better. I noticed that the bakery was the meeting point where most women interacted on a daily basis; it was the place where they shared their experiences, anecdotes and feelings. Therefore, the bakery was an important symbol for the community; it contributed to strengthening social capital and kept a sense of community. Direct observation helped me to identify this aspect that otherwise would have been difficult to notice.

There were instances where I had to apply a more systematic approach. For example, I was invited to the Christmas celebration of the community. In this instance, I focused my attention in particular resilience capacities, such as participation and cooperation. Similarly, I applied a more structured observation when a community member offered me to be a ‘tour guide’ and show me the entire community. In this occasion, I developed an observation protocol focused on the resilience capacities.

4.4.3.3. Informal Conversations

Ethnographic research involves the use of informal conversations as sources of data because they provide insights and meanings that could not be obtained in an interview setting (Luton, 2015, p.106). Informal conversations became a relevant method that I developed during all the process of my fieldwork. They took place mainly during my field visits and emerged spontaneously after the interviews or when I was walking in the community. In order to keep the spontaneity and flow of these conversations, I did not record them; however, I took notes immediately after. They varied in length, from 30 minutes to over three hours.

Informal conversations were an important tool to uncover sensitive topics, especially the internal conflicts of the community. For instance, an interview finished, one of the members of the family arrived and started sharing with me all his discontent with community leaders. This person must have openly manifested his feelings against the community authority knowing that I finished recording. Another informal conversation happened randomly when I visited one of the 'Palomitas Blancas' members, a community organisation introduced in the next chapter. Even though the women of this group had their traditional meeting, they invited me to stay and shared with me childhood stories and other anecdotes experienced in El Morro.

4.4.3.4. Documentation

Documentary sources were also a relevant method used in my research. I could access easily documents generated after the disaster but it was difficult to get documentation about the pre-disaster period. The main reason was the devastating tsunami effects; the waves completely destroyed all the official documentation in Talcahuano City Council and in the community. Therefore, I had to rely mainly on post-disasters documents.

Municipal officers offered me not only access to documents related to El Morro but also to those concerning to city level. These documents include social projects carried out in El Morro and Talcahuano region, surveys and community diagnosis. They also shared with me photographs and video clips that helped me understand the reality of El Morro and the context of Talcahuano city. NGO practitioners also contributed with documents that summarise the results of participatory diagnosis conducted in El Morro. Apart from the documents provided by municipal officials and NGO practitioners, I used newspapers as sources of information. Finally, I was able to access a study developed by an anthropology student from a local university which was instrumental in understanding the emergency period in the community.

4.4.3.5. Social media

Social media, particularly *Facebook* and *YouTube* became important sources of data in my research, especially regarding information about the pre-disaster period. Most of paper reports and material documentation were destroyed by the tsunami. Therefore, online resources became the only available option to get to know that period. Facebook played an important role before and after the disaster. El Morro created a Facebook group called ‘Yo soy *Morrino*’ (I am *Morrino*) where people shared stories, pictures and events. As most of the actual pictures were damaged by the tsunami, the historical pictures uploaded to Facebook before the disaster contributed to preserving the collective memory of the community. Furthermore, after the disaster, Facebook became the means through which people could update information about the state of the community and people. For instance, it was used to appeal for help and to convene community meetings. It was also the virtual means through which people could comfort each other and external people could express condolences to the affected families. Therefore, Facebook became an important instrument that was beyond a simple social media tool; it became a virtual space that contributed to strengthening resilience capacities such as the sense of community, social capital and cooperation. Using Facebook as a research method was not part of my initial plan but I considered it after people told me about this Facebook group during my field visits. I used my own personal Facebook account and requested to be part of this group.

YouTube was the social media channel through which I was able to learn about the situation in the first days after the disaster, the immediate emergency, an important period that provided me with relevant insights about how communities can survive without external aid (see Chapter 6). Furthermore, YouTube was also helpful to understand the winter emergency period and the reconstruction periods. Similarly to Facebook, YouTube was not part of my original methodological design, nevertheless, during my fieldwork, people shared with me several stories that I could later support with YouTube videos.

The use of social media has been underestimated by researchers due to the issue of ‘representativeness’ and other limitations such as coverage (Barbour, 2014, p.196). Yet, in the natural disaster field, social media may become an important tool to study resilience, especially after the massive destruction of material documentation caused by disasters such as tsunamis and earthquakes.

After collecting the data from the El Morro case study, my next step was to analyse it, as I explain in the next section.

4.5. Data Analysis

Once data was collected from transcriptions, field notes, documents and social media, I had to choose the best way to analyse it. Qualitative analysis is a non-numerical examination and interpretation of observations, for the purpose of discovering underlying meaning and patterns of relationships (Babbie, 2004, p.370). Therefore, searching for explanatory patterns was my main focus in the data analysis. To this end, I applied *pattern-matching* and *explanation-building* strategies.

The pattern-matching logic was the main strategy that I applied for analysing the El Morro case study which contributed to strengthening the internal validity. This strategy consists of comparing an empirical based pattern with a predicted one (Yin, 2003, p.106). The predicted based pattern in my research was the theoretical model of community resilience developed in the previous chapter. This theoretical model was compared with the empirical evidence observed in my fieldwork. Nevertheless, contrasting the theoretical model with the empirical data was not enough; I also needed the explanation-building strategy in order to achieve an in-depth understanding of the resilience phenomenon.

Explanation-building is a special type of pattern-matching which analyses case study data by building an explanation about the case (Yin, 2003, p.120). Using this

strategy helped me identify the set of causal links among the resilience capacities and external factors involved in the process of community resilience in El Morro. Furthermore, in order to build this explanation, methodological triangulation and triangulation of sources proved to be two helpful tactics throughout the analytical process. Finally, in order to complement the explanation-building strategy, I used a concept mapping strategy. This is a graphical display of concepts and their interrelations, useful in the formulation of theory (Babbie, 2004, p.381). Using this strategy, I was able to depict clearly the integrated model of community resilience and the interconnections among all the elements involved in the process as I explained in Chapter 9.

The data processing was done manually, following a rigorous coding strategy in order to discover patterns among the data. I decided to apply a complete coding rather than a selective one, which means that my objective was to identify *anything* and *everything* of interest or relevance to my research objectives (Braun and Clarke, 2013, p.206). Applying this complete coding strategy helped me find new components and interrelations that I did not initially consider in the design of the theoretical framework. For instance, although cultural capacities were not part of my original model, I included them in the coding frame because they are relevant to the purpose of my research. Therefore, during the coding process, the assumptions about the resilience phenomenon were questioned and explored, leading to new discoveries (Corbin and Strauss, 2008, p.62).

Conclusions

The objective of this chapter was to present the methodology that I applied to test the theoretical model of community resilience presented in Chapter 3. Methodological decisions were based on my research question and the main propositions of community resilience. This was crucial to guiding every stage of my fieldwork.

Resilience has been scarcely investigated from the perspective of people. For this reason, I decided to adopt an interpretative and phenomenological approach because it will contribute to answering my research question. The impact of the 2010 earthquake and tsunami on community resilience will be explored from the experiences of participants. This is also in line with my proposition that communities are the centre of community resilience and, therefore, communities should be seen as *active agents* rather than merely victims. People's lived experiences are essential to understanding resilience and the inductive nature of this research provides the opportunity to explore in-depth the capacities that helped people cope with and recover from the Chilean disaster. The use of a *single case study*, more specifically an extreme case is also in consonance with my argument that resilience should be constructed not only from a local 'city' level but also from a local 'micro' level where small-scale communities such as El Morro play a crucial role. The El Morro case study is a unique case, it was the only community that completely survived the tsunami impact in Talcahuano. The survival story of El Morro will show the power of communities to deal with disasters.

The principle of *contextualisation* was also relevant to guide the data collection process, including the research methods, the selection of research participants and pilot study. Firstly, I used a variety of research methods, including semi-structured interviews, observation, informal conversations, documentation and social media. Using several research methods allowed *methodological triangulation*. Secondly, my research participants included not only actors from private and public institutions but also community members, both leaders and ordinary members. The

use of different research participants also enabled the *triangulation of sources*. Thirdly, the pilot study was crucial in refining my initial methodological design according to the reality of El Morro. Field visits during the pilot study led me to adopt an *incidental ethnography* in which the inclusion of new methods such as informal conversations provided me with crucial information about the *dark side* of the community such as internal conflicts. Incidental ethnographic encounters were useful to understand the reality of people living in El Morro, people were more willing to share their stories in an informal atmosphere. The use of ethnography for disaster research can generate unique data that can be useful for disaster management as I will show in the following chapters. Furthermore, social media such as Facebook and YouTube became important sources of data about the pre-disaster, emergency and reconstruction periods. I argue that social media can be relevant methods in the disaster field, especially when material documentation is destroyed by the impact of disasters such as tsunamis.

The following Chapters 5, 6, 7 and 8 present the findings of the El Morro case study. In order to understand these findings, I need to present the context of the 2010 Chile earthquake and tsunami.

CHAPTER 5

THE RESEARCH CONTEXT

Introduction

In the last chapter, I presented the methodology that I applied in the El Morro case study in order to test my theoretical model of community resilience. Before discussing my findings, I introduce the general context of the 2010 Chile earthquake and tsunami. This context provides a better understanding of El Morro at the different stages of the disaster and the potential external factors that affected the resilience of the community. Therefore, it partly addresses my second research objective: to examine the external factors that enhance or undermine community resilience in the Chilean context. As I made *contextualisation* one of the main principles of community resilience, the analysis of this context is even more important.

I begin by examining the general context of the 2010 Chile earthquake and tsunami at two levels, national and city. Although the focus of my research is on the micro-level, especially on small-scale communities, both national and city level, provide valuable information about the external context in which El Morro operated after the disaster. At a national level, I begin by examining the natural disaster records of Chile. The long history of disasters allows gaining a better understanding of why Chile is one of the high-risk countries in the world. I then explain the 2010 Chile earthquake and tsunami. In this event, I focus not only on damage and losses but also on the social consequences and some political and social factors that affected the response to the disaster, such as looting and volunteerism. Furthermore, the analysis of the aftermath of the disaster at three specific stages, including immediate emergency, winter emergency and reconstruction, provides insights into how the country coped with and recovered from the event. After presenting the general context of the country, I examine the context of Talcahuano, the region where El Morro is located. Talcahuano was one of the regions most affected by the disaster

in the country. I argue that the damage was not caused only by the closeness to the sea but also by political and administrative factors that negatively affected the disaster response.

In the last section of this chapter, I present the context of the El Morro case study. I focus on the pre-disaster period which I consider important to analyse because it provides a benchmark to understand the changes in community resilience after the disaster. In this section, I describe the socio-demographic characteristics and history of the community. I then explain the resilience capacities that I observed in El Morro before the disaster.

5.1. The context of the 2010 Chile earthquake and tsunami at the national level

Chile, located in South America, is the longest narrow country in the world with a population estimated at 17.631.579 in 2013 (INE, 2015). Nevertheless, the unusual territorial shape is not the only interesting fact about this country. As I stated in Chapter 1, Chile is also one of the high-risk earthquake countries in the world. It has registered 186 significant earthquakes in its history (NOAA, 2012). In the last century, NOAA's database registered 106 earthquakes; this is a frequency much higher than in other seismic countries such as Japan and Mexico (Bernal, 1992). The seismic history of Chile includes the most powerful earthquake ever recorded in the world, the great 1960 Chile earthquake and tsunami, rating 9.5 M_w which caused 2,223 deaths (NOAA, 2012). In the present century, the same database has registered 23 major earthquakes, including the 2010 Chile earthquake and tsunami, rating 8.8 M_w , the most powerful after the great 1960 earthquake. The disasters record in Chile indicates that, unfortunately, more earthquakes would strike the country in the coming years. The records after the 2010 disaster are not very encouraging. After the 2010 earthquake and tsunami, other ten major earthquakes have hit the country. Among them, the most powerful registered were the 2014

Iquique earthquake (8.2 M_w) and the 2015 Illapel earthquake (8.3 M_w) (NOAA, 2012).

The large record of disasters in Chile could suggest that the country was prepared to face major earthquakes; nevertheless, this was not the case in the 2010 disaster. The disaster exposed important failures in the national emergency warning system and the lack of knowledge and coordination among political authorities. Furthermore, the reaction of people after the disaster also revealed the social fragmentation of the Chilean society which caused was is called the *social earthquake*. In order to understand these aspects, I present a general context of the 2010 Chile earthquake and tsunami.

The 2010 Chile earthquake is considered to be the sixth largest ever recorded in the history of humanity and was the most powerful earthquake to hit Chile after the great 1960 earthquake. The earthquake caused a tsunami which swept away several villages. The epicentre was located off the coast of Maule Province in south-central Chile, having a magnitude of 8.8 on the moment magnitude scale (see figure 5.1). The disaster impacted 75% of Chilean population and caused the death of over 500 people (Morales Muñoz, 2010). This death toll is comparatively lower than those in other earthquakes with smaller magnitude. For instance, the 2010 Haiti earthquake that caused 220,000 deaths. The main reason is attributed to the strict seismic design code developed after the 1960 earthquake (BBC, 2010d).

The disaster caused large-scale damage throughout the country. The total losses were estimated at US\$30 billion; this is correspondent to 18% of the GDP of Chile. Over 15,000 people lost their jobs in the country (EERI, 2010) and more than 200,000 houses were destroyed or seriously damaged (SEGPRES, 2011). Deprived people suffered the most dramatic impact; in the six regions affected, 12% of people from the poorest income quintiles were affected by the major destruction of housing. By contrast, only 4.6% from the richest income quintiles were damaged (MIDEPLAN, 2010).



Figure 5.1. Epicentre of the 2010 Chile earthquake (Source: Reliefweb, 2010)

5.1.1. Mistaken tsunami alarm

Even though the death toll after the earthquake was lower than in other earthquakes in recent years, these deaths could have been prevented by a prompt tsunami warning. The initial warning was cancelled by The Hydrographic and Oceanographic Service of the Chilean Navy (SHOA) and announced on the radio by the Chile's president (EERI, 2010). This mistake was admitted later by Chile's Defence Minister at that time (BBC, 2010a).

There is an ongoing judicial investigation trying to determine the guilt of the Chilean authorities who did not provide a clear tsunami warning. This investigation seeks to establish responsibility for the confusing and contradictory chain of decisions made by government officials and emergency agencies shortly after the earthquake which caused the deaths of 156 people and the disappearance of 25 more during the tsunami (Bonney, 2013). The catastrophic results of not issuing a tsunami warning after the earthquake not only showed the inefficient national emergency system at that time but also the lack of coordination among government institutions and the

insufficient preparation to deal with large-scale natural disasters (Bitar, 2010). These serious deficiencies created chaos after the disaster, leading to a period known as *the social earthquake*.

5.1.2. The social earthquake: The dark side

The earthquake generated not only physical destruction but also social destruction. Complete chaos and violence reigned over the country. Uncertainty and fear led to looting and crime. The vague information provided by political authorities and the central government's slow emergency response led to public discontent against the government. Anger against the government was evident as illustrated by the words of a resident in an interview with CNN: 'It's a lie. The government did not do a thing, and now people are taking things into their own hands' (CNN, 2010).

Looting took place in the Bio-Bio region, in Concepcion province more specifically, where El Morro case study is located. Looting is not a new phenomenon in the country; it is a common phenomenon after street protests and has also been observed in past disasters. Nevertheless, the looting and disturbance of the magnitude of the 2010 disaster were unprecedented in the history of the country. People looted not only supermarkets to take basic supplies such as food and water but also banks and department stores to take non-essential supplies such as televisions, jewellery, laptops, cell phones and other luxury items. This created a state of violence, desperation and insecurity in the country. Furthermore, the widespread looting also threatened the safety of houses. People were afraid that mobs from other communities would come to loot their houses. This created fear and panic among people, adding more stress to the already tragic situation. People were terrified and the situation led to a state of mass hysteria.² After 24 hours the President imposed a dusk-to-dawn curfew and the Chilean military sent thousands of troops to stop

² The following video illustrates the state of collective hysteria in the Bio-Bio region. https://www.youtube.com/watch?v=U_CiYKDWHRs

looters and enforce the curfew in Concepcion. The following quotation from a newspaper reporter can give a glimpse of the chaotic scenario after the catastrophe.

It's just two days after an 8.8 magnitude earthquake toppled walls and collapsed buildings, but people are looting. Young men ducked beneath gates and smashed windows, yanking out boxes holding appliances and grabbing cell phones and clothes. Grown women slid between window bars and ran down streets with bags full of booty. A large green military truck with a hose bore down on the crowd using pressurized water to deter the crowd but soldiers patrolling with big guns did nothing to stop looters on the streets. The looting was so out of control at La Flor clothing store that a fire broke out and clouds of black smoke filled the sky. The firefighters could not even fight the fire because they were too busy with the search and rescue operation (CNN, 2010).

This period of chaos, looting and uncertainty is called the *social earthquake*. According to Chilean scholars, it revealed more than a common reaction after a disaster as it has been observed in other contexts (e.g., the 2010 Haiti earthquake and 2015 Nepal earthquake). It showed the fragmentation of the Chilean society, the economic inequality, the distrust and discontent towards government and social segregation (Aigner, 2010; Sanzana Calvet, 2010). Everyone could see the two faces of the country: the modern versus the marginalised (EERI, 2010, p.17). Looting also reflected a crisis of social cohesion and values where individualism and selfishness took place (Aigner, 2010, pp. 9-10). One example was the profile of looters who generally appeared to be linked to poverty and unemployment. Nevertheless, in the case of the Chilean disaster, professionals, firemen and soldiers were also identified among looters (Sanzana Calvet, 2010, p. 154).

Finally, the social earthquake could be conceived as a result of the inefficient emergency system, lack of coordination among political authorities and a consequence of structural inequality in the country³. The social earthquake also showed the *dark side* of community resilience.

³ Although Chile has one of Latin America's strongest economies, the distribution of income is the most unequal in The Organisation for Economic Cooperation and Development (OECD).

5.1.3. The social earthquake: The positive side

The social earthquake revealed the *dark side* of community resilience. Nevertheless, a *positive side* also emerged showing that communities have the potential for resilience, one of the principles that I mentioned in Chapter 3. This positive side was observed in several collective actions immediately after the disaster. Despite the lack of coordination among political authorities, people were able to survive and cope with the emergency in the first days after the disaster. There were three important actions that were observed at different levels. The first one was the collective action in small-scale communities. The second one was the volunteerism and solidarity that emerged nationwide. The third one was the humanitarian response to the disaster.

In small-scale communities collective actions were carried out in order to satisfy the basic needs of people, including survival, food, drink and safety. The most important basic need was the survival to the imminent tsunami. As I mentioned above, a prompt tsunami alert could have saved lives. Nevertheless, it is interesting to mention that despite the devastating effects of the tsunami in the coastal communities, only 12 fishermen died in the disaster. Moreover, most of these victims died while attempting to rescue other people in their boats (Contreras and Winckler, 2013, p. 9). The small number of casualties in fishing villages, despite the mistaken tsunami alarm, could be the result of the activation of internal capacities of coastal communities, specifically local knowledge and fishermen's experience. This is an essential resilience capacity that I analyse in depth in Chapter 6.

The second basic needs were food and water. The inefficient response of the government to the emergency left people without food and water in the first days of the disaster (Aigner, 2010, p.4). Therefore, people had to quickly mobilise internal resources to cope with the aftermath of the situation. In the Bio-Bio region, almost 40% of people implemented a collective strategy to cope with the food and water scarcity (MIDEPLAN, 2010, p.14). Running community kitchens was the

most common strategy. Collective strategies were also deployed to increase the security in the communities. Safety needs were enormously intensified by the looting and collective hysteria in the country. In order to increase the sense of security, communities implemented self-defence methods to prevent mobs attacks, including installing perimeter barriers, making improvised weapons, using knives and sticks, and organising security guards (Sanzana Calvet, 2010, p.155).

The collective actions generated in the aftermath of the disaster in order to survive and satisfy the basic needs of communities occurred mainly in small-scale communities. This is consistent with my idea that community resilience should be also promoted at micro-level. These collective strategies showed that communities have the potential for activating internal resources and capacities to cope with disasters, one of my main principles of resilience. More importantly, in a scenario where a government fails to provide relief to people, the activation of community resilience in small communities could be crucial for the survival of people in the first days of the disaster. El Morro case study provides a better understanding of this proposition.

Volunteerism and solidarity that spontaneously arouse after the disaster also reflected the positive side of community resilience. These were actions that I also considered to be enabling factors in Chapter 3. Thousands of volunteers responded to the disaster by removing debris, distributing water and food, and providing shelter (PAHO/WHO, 2010, p.35). For instance, in San Pedro de la Paz, one of the cities affected by the earthquake, more than 300 volunteers gathered immediately after the disaster in the city hall to offer their help (González-Muzzio, 2013, p.36). Furthermore, the role of young people was particularly interesting. Despite their low levels of participation in elections, in the 2010 disaster, they launched several campaigns in schools and universities to collect food and clothes. The role of young people was also crucial in the first post-disaster months.

International aid was another positive action after the disaster. Chile officially requested international aid after assessing the damage and needs of the communities affected by the disaster. The humanitarian response reached unprecedented levels in the country. Chile received aid from 31 countries, including Japan, China, Argentina, Brazil, Russia, France, Croatia, Cuba, Venezuela and Australia. Furthermore, multilateral organisations such as The Organization of American States (OAS), The United Nations (UN) and The European Union (EU) responded immediately to the appeal (López Tagle and Santana Nazarit, 2011, p.162). Donations included field hospitals, generators, rescue teams, tents, food, water purifiers and other relief supplies. The humanitarian response was crucial during the emergency period in supporting the rescue efforts and providing assistance to the families affected by the disaster.

Although the 2010 disaster showed a *positive side*, this was underestimated by media. Unfortunately, the focus of media was mainly on the *dark side* of the disaster, namely the looting, violence and chaos that emerged after the disaster. Consequently, collective actions, volunteerism, solidarity and humanitarian aid were not cover in the same way as the negative side of the disaster. Instead of referring to the disaster as ‘catastrophe’ or ‘earthquake or tsunami’, mass media used terms as ‘chaos’, ‘anarchy’, ‘disorder’ and ‘social earthquake’ (Sanzana Calvet, 2010, p.150). The ‘media tsunami’, as it was called (Aignerren, 2010, p.5), contributed to exacerbating the panic and collective hysteria in the country.

5.1.4. The aftermath of disaster

The following months after the disaster were critical, being marked by a series of political and social events that influenced the course of the recovery process. The most important event was the presidential transition. The earthquake occurred under Michelle Bachelet’s government. Nevertheless, on 11 March 2010, only a few days after the disaster, Sebastian Piñera assumed the presidency. He became the first right-wing leader since the end of the military dictatorship in 1990. This brought

institutional changes: centre-left political authorities were removed from their positions and consequently new officials assumed the leadership of central and regional institutions. This led to delays in the implementation of emergency and recovery programmes, and the coordination among institutions, especially between local and regional governments.

In terms of planning, the new Chilean president formed an ‘Inter-Ministerial Committee on Reconstruction’ and an ‘Emergency Committee’ in order to deal with the emergency and recovery periods (SEGPRES, 2011). A Reconstruction Plan was designed with three main stages: immediate emergency, winter emergency and reconstruction.

a) The immediate emergency (The first days after the disaster)

This period involved burying casualties, providing medical assistance to those injured, searching for missing people, restoring public order and safety, re-establishing basic services such as water and power, and restoring transport and communication (SEGPRES, 2011, p.5).

b) The winter emergency

This period started in March 2010 and ended at the beginning of winter in June 2010. This phase involved students returning to class, ensuring an efficient healthcare system, creating new 60,000 jobs, removing debris, repairing roads and bridges, and building temporary housing (SEGPRES, 2011, p.5).

Providing shelter to the people, who were left homeless after the disaster was the paramount concern at this stage. Homeless people were living in emergency tents in precarious conditions. These tents were not designed to cope with extreme weather conditions such as rainfall and cold. Therefore, the main goal was building temporary housing before winter. For this reason, this stage is called *winter emergency*. This meant that the government had less than four months to accomplish this objective.

According to the records of the Ministry of Housing and Urban Development (MINVU, 2011), nearly 80,000 families received temporary housing. Almost 95% of these families (75,000) had the new units built on their own land. However, 4,350 families had no place to build a house, either because the tsunami swept away their dwellings or because the earthquake destroyed the buildings they inhabited so they were relocated in other areas. These areas were called *aldeas* (small villages) which basically refers to emergency camps. El Morro case study was one of these emergency camps. Specifically, 104 *aldeas* were constructed in the regions most affected by the earthquake and tsunami: Valparaíso, Libertador Bernardo O'Higgins, Maule and Bio-Bio.

These *aldeas* were inhabited by the poorest sectors of Chile's population: a crossing of vulnerability indicators used by the Government found that 88.9% of the families living in the emergency camps belonged to the 40% most vulnerable of the national population (MIDEPLAN, 2010). The *aldeas* were placed on vacant lots and most of them were not urbanised. Regarding temporary housing, they did not meet minimum standards of habitability, encompassing only 18m², causing overcrowding, and several physical and mental problems. Furthermore, the lack of basic services inside the temporary housing forced families to share community bathrooms and the water supply. People lived in these extreme conditions for more than four years after the disaster. The extreme vulnerability faced by who lived in these emergency camps also justified the selection of my case study.

The winter emergency was also characterised by the solidarity of people. Government institutions, NGOs, private companies, universities, schools, churches and international organisations provided vital support for families living in *aldeas*. For instance, they provided medical and psychological support, food, clothes and recreational activities for children. Nevertheless, the most important support came for volunteers, especially young people, who, during the four months of the winter emergency, contributed to building 80,000 temporary housing in the disaster-affected areas. According to 'Un Techo para Chile' ('A roof for Chile'), a non-profit

organisation that mobilises youth volunteers to fight extreme poverty, more than 75,228 volunteers were mobilised to build temporary housing in the regions affected by the disaster (TECHO, 2010, p.5).

c) The reconstruction period

This period was implemented between June 2010 and March 2014, and the main objective was to ensure the recovery in all the areas affected by the disaster, including housing, education, health, infrastructure, cultural patrimony, government buildings, employment, and armed forces (SEGPRES, 2011). The reconstruction also involved improving the national emergency system. At the end of the reconstruction period, most areas were recovered. The last report of the Piñera government mentions that of the 222,000 houses promised to families affected by the disaster, 199,000 were built (90%), 22,800 were in build process (9,8%) and 495 (0.2%) had not been built yet (EMOL, 2014).

The recovery process is recognised internationally as one of the most successful when compared with other major disasters in the world (SEGPRES, 2011, p.16). Nevertheless, this success was quantitative but not qualitative. Although data the efficiency of the reconstruction process, it does not show the negative effects on citizen participation. Unfortunately, the reconstruction plan did not involve communities. Many programmes were imposed by the government which caused several conflicts between the government and the communities affected by the disaster as I show in the El Morro case study. Furthermore, misleading information and delays in reconstruction caused anger and distrust towards the government. As a result, social movements emerged such as ‘The National Movement for Just Reconstruction’ (MNRJ). Media also played a crucial role. Media coverage decreased significantly after the Copiapó mining accident in August 2010, when 33 miners were trapped underground for more than two months. Fortunately, all miners were rescued and survived the incident. While the rescue became a global event, the families living in emergency camps felt excluded and abandoned.

Paradoxically, the end of the reconstruction period was marked by another major incident. A new earthquake, the ‘Iquique earthquake’, occurred in 2014 but this time, the northern part of Chile was affected as I have already mentioned at the beginning of this chapter. The 2014 disaster had a magnitude of 8.2 M_w and also triggered a tsunami. Nevertheless, the damage was comparatively lower to the 2010 disaster, six casualties were registered and in terms of infrastructure, about 8,000 houses were damaged (Cortés, 2014). Ironically, this disaster coincided with the beginning of the government of the re-elected President of Chile Michelle Bachelet. Therefore, this disaster was felt as a second opportunity to test the new emergency system in the country which, fortunately, this time, worked efficiently. The tsunami alert was set off and thousands of people evacuated. Furthermore, the areas affected by the disaster were declared ‘catastrophe zone’, and looting and vandalism did not take place (González, 2014).

5.2. The context of the 2010 Chile earthquake and tsunami in the Talcahuano region

El Morro is a fishing village located in the Talcahuano region. I consider it is important to provide some general context of Talcahuano, because this provides a better understanding of the situation of El Morro during the emergency and reconstruction period, especially in terms of the relationship with the city council.

As Talcahuano is a port region, the economy is based mainly on commercial fishing and seafood processing. Talcahuano is located in the greater metropolitan area of the Bio-Bio Region, on the south-central coast of Chile. Together with other ten municipalities, it is part of the Concepción Province, which is one of four provinces of the Biobío Region (see figure 5.2). Talcahuano is the seventh most populated region in the country with a population estimated at 177,069 in 2013 (INE, 2015, p.578).

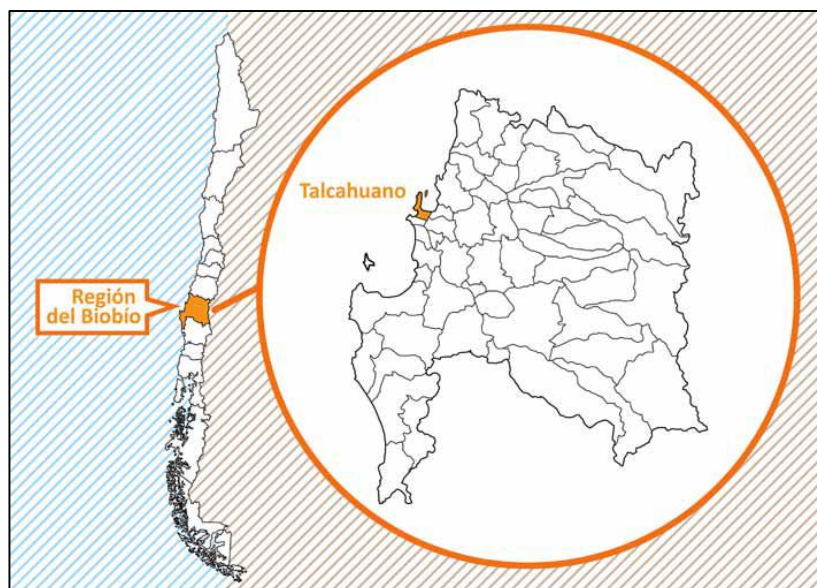


Figure 5.2. Geographical location of the Talcahuano region (Source:UNDP, 2011)

Talcahuano was one of the regions most affected by the 2010 disaster. Located on the coast, it suffered the most devastating consequences of the tsunami. Furthermore, Talcahuano had to pay the price of the mistaken tsunami alarm. In the Biobío Region, Jaime Tohá, the highest regional authority, called off a tsunami alert on the radio. Local authorities from Talcahuano followed this message and advised people to return home because there was no tsunami risk. Consequently, many people who were in the hills of Talcahuano came back to their houses where they died. Official records show that the first tsunami wave crashed the coast of Talcahuano within 18 minutes after the earthquake, at 3:52 a.m. (NOAA, 2015).

The centre of Talcahuano and small coastal towns were completely destroyed. Only the words of people could best describe the scene of desolation witnessed after the disaster: ‘It looked as if an atomic bomb had hit the city’ (*interview Mo-12, municipal officer, my translation*). Fishing boats were stranded in the middle of the roads and inside shopping centres and buildings. Thousands of dead fish were washing up on the city, causing unpleasant smells. Houses, shops, cars and fishing industries were swept away by the waves. Public buildings located in the city centre collapsed, including the city hall, police station, firehouses and hospitals (UNDP,

2011, p.19). The scale of the destruction and devastation was unprecedented in the city. 9,173 houses were damaged which represents 20.69% of the total housing in Talcahuano (INE, 2010). The *dark* and *positive* side of the disaster were also present in the region: scenes of violence and looting contrasted with solidarity and community organisation observed in small communities.

Regarding the stages of the disaster, there are factors that I consider to be particularly relevant in order to better understand the situation of El Morro described in the following chapters.

5.2.1. Immediate emergency (The first days after the disaster)

The immediate emergency involved the same activities mentioned at the national level. Nevertheless, there were three specific factors that delayed the delivery of aid and support to the communities affected by the disaster. The first factor was the destruction of public buildings which obstructed the coordination among local authorities. The second factor was the lack of municipal staff members in the first 72 hours after the disaster. Most of the municipal officers lived in Talcahuano and, therefore, were equally affected by the disaster. Some of them even died and other lost their houses and also relatives. The few municipal officers who were present in the first hours were not enough to deal with the magnitude of the catastrophe.

The third factor was the centralisation of the emergency system in the country. In Chile, local governments have restricted resources, autonomy and responsibility for local development.⁴ Emergency management is a responsibility shared between central and local governments. City councils have resources to deal with disasters of minor scale or everyday emergencies such as winter storms, minor flooding and house fires. However, city councils have neither the expertise nor the resources to deal with disasters of great magnitude such as the 2010 Chile earthquake and

⁴ City councils in Chile represent only 13% of total government spending.

tsunami. This centralisation was detrimental to Talcahuano whose city council could not properly respond to the emergency. Furthermore, in order to request resources from the central government, the city council had to first assess the damage and the needs of the population, a process which took several days due to the magnitude of the event (UNDP, 2011, p.21). As a result, the distribution of aid was delayed.

5.2.2. The winter emergency (March-June 2010)

In Talcahuano, similarly to the rest of the country, this stage was characterised by the installation of temporary housing and the construction of *aldeas*. Ten *aldeas* or emergency camps were constructed in different areas of the region (UNDP, 2011, p.18) Nonetheless, at this stage, centralisation had a negative impact once again. Most of the temporary housing had a standardised design that did not consider the particularities of the communities affected by the disaster. They were not suitable for coastal areas because they were not made to resist the wind and the humidity that characterised this geographical area (UNDP, 2011, p.21). Therefore, Talcahuano city council had to invest additional money in building material and workforce to improve the quality of the temporary housing received from central government.

5.2.3. The reconstruction period (June 2010-March 2014)

The reconstruction period in Talcahuano focused mainly on employment and housing. On the one hand, employment was seriously affected, especially the livelihood of the fishermen who lost their boats in the event. Consequently, creating new jobs and providing boats to fishermen were the main objectives of the local government. To this end, coordination with external institutions was crucial due to the limited budget of the city council. For instance, the result of the coordination with the institutions involved in the solidarity campaigns ‘Mar de Esperanza’ (‘Sea of hope’) and ‘Volvamos a la Mar’ (‘Back to the sea’) was the donation of artisanal fishing boats to Talcahuano, including El Morro (ANAPESCA, 2010).

On the other hand, the objectives regarding housing were to eradicate the 10 emergency camps in the city and build permanent houses. At the end of this period, most houses were rebuilt or in the building process and nowadays all the camps are eradicated. Nevertheless, despite the success noticeable in quantitative terms, the lack of community involvement in the reconstruction period also had a detrimental impact on the affected communities. The major impact was observed in displaced communities. Some communities had to be relocated to other areas of the region and even to other regions. For instance, the families of ‘Lomas de Santa Clara camp’ were displaced to Hualpen, another region of the Concepcion province. Furthermore, three fishing villages, ‘Candelaria’, ‘Cantera’ and ‘Puerto Inglés’, were displaced to a hill, far away from the sea, which negatively affected the economy of the families who depended on fisheries for their livelihood.

Finally, there are three specific factors, mainly political, that are worth mentioning regarding the reconstruction period in Talcahuano:

- The first one is the relationship between central government (centre-right) and local government (centre-left) which became strained. The lack of coordination between them caused misleading information and delays in reconstruction, directly impacting the communities affected by the disaster. For instance, according to municipal officers from the Talcahuano City Council, regarding the design of housing, the central government held meetings in communities without inviting local authorities (based on *interviews Mo-43 and Mo-4, municipal officers*). Therefore, the planning process of housing was chaotic, generating several conflicts and increasing the anger of communities towards political authorities. Furthermore, it was also common that central government officials were distributing the same aid as local officials which generated redundancy of actions (UNDP, 2011, p.21)

- The second factor was the Chilean municipal elections which took place on 28 October 2012. Gaston Saavedra, the mayor at that time, was re-elected as mayor of Talcahuano to a second term with the majority of electoral votes (75.04%). The continuity of the same local administration was considered favourable in the reconstruction process. The permanence of the same municipal staff members was crucial for creating permanent bonds with communities affected by the tsunami as noticed in El Morro.

- The third factor was related to disaster risk reduction. Talcahuano was a pioneer in implementing an office of ‘Disaster Risk Management’ to deal with disasters of major scale such as earthquakes and tsunamis. International cooperation and partnership were significant in the process of creating this new office, especially the logistic support from The United Nations Development Programme (UNDP) and financial assistance from the European Union (EU). Furthermore, The Japan International Cooperation Agency (JICA) also contributed with the training of municipal officers in emergency response. The office focuses on preparedness, response and recovery actions. The main activities involve delivering community workshops, providing training to community leaders, implementing evacuation simulations and designing risk maps. The new office was successfully tested in the 2014 Iquique earthquake when a tsunami warning was issued for the entire coastline of the country, including Talcahuano. Nowadays, Talcahuano is the only region in the country that has implemented an office of Disaster Risk Management (based on *interview Mo-13, municipal officer*).

After analysing the general context of the 2010 Chile earthquake and tsunami, both at national and city levels, my next step is to present a general context of El Morro case study before the disaster. As I have mentioned throughout my thesis, El Morro is located at a micro-level, which is my focus of interest.

5.3. The context of the El Morro case study: before the 2010 Chile earthquake and tsunami

El Morro is one of the poorest communities in Talcahuano and one of the most affected by the Chilean earthquake and tsunami. El Morro owes its name to the fact that it is located at the foot of the hill called *El Morro*. In front of the community there is *El Canal El Morro* (El Morro Channel) and at the back there is *El Estadio El Morro* (El Morro Stadium), the oldest stadium of Chile and one of the most important in the Talcahuano region (see figure 5.3). El Morro was illegally settled in a land belonged to The Chilean Navy (Armada de Chile). The location just in front of the sea, *the Concepcion bay*, was the perfect place for fishing but not for resisting a tsunami as I explain in the next chapter. The settlers started constructing their houses without any legal regulation in areas at risk not only for tsunamis but also for floods and landslides because the location is close to El Canal El Morro and El Morro hill respectively.

El Morro hill is crucial in the analysis of the El Morro case study as I show in the following chapters. This hill is a private space belonging to the Chilean Navy where pedestrian access was restricted before the 2010 Chile earthquake and tsunami. The main entrance had a fence and the gates were locked and, therefore, inhabitants were not able to use this space. At the top of the hill, there is an old fort that was used in historical wars for defensive purposes due to its strategic location in Talcahuano. The last time that El Morro hill was used for this purpose was in the military dictatorship period in Chile 1973-1990.

Regarding the connection with the region, El Morro is located in an urban area that is well connected to the majority of public services in the Talcahuano region. It usually takes about 15 to 20 minutes to walk into the city centre. The city centre hosts the most important services and institutions at the local level, such as the city hall, schools, health centre, postal service, supermarkets, and emergency services. Some regional government offices are also located in the city centre, such as the Social Security Institute (IPS), the National Health Trust (FONASA) and the

National Women's Service (SERNAM). Furthermore, the community has good access to public transportation; the bus stop is a just five-minute walk from the community and there are frequent service lines that connect the community to the main regional hubs (based on my own observation).

Although El Morro enjoys a prime location, it is not free from social exclusion. The stigma and discrimination against El Morro prevail due to the low socioeconomic status that characterises fishing villages in Chile. Most of the poorest neighbourhoods in Chile are located on the periphery, without access to close public services. The social exclusion and discrimination towards these communities is common in the Chilean society. Therefore, the good location of El Morro is the exception to the rule. However, living in a central urban area does not necessarily imply the use of diverse opportunities or services offered by public or private institutions and this was the situation of El Morro before the 2010 disaster. Despite the closeness to public services, people from El Morro did not use very often these services and the interaction with external networks was scarce (based on field notes and informal conversations).



Figure 5.3. Satellite image of El Morro (Source: GoogleEarth, 2016)

5.3.1. The history of El Morro

El Morro is a fishing community older than 100 years standing in the Talcahuano region. There is no official information or historic records that mention its origin. However, a rich oral tradition and local knowledge have helped to preserve the culture and history of El Morro. One of these traditions that I found during the fieldwork was the *self-build*, a practice used by settlers to create their houses.⁵ At the beginning, the construction was precarious. They used temporary materials that were progressively replaced with high-quality building materials such as concrete and wood. The physical size of the houses was also gradually modified as the household size was growing.

In El Morro, most married couples decide to live in the parental home which means that the formation of extended families is common. They are usually constituted by three or, even more, generations of the same family which explains the necessity of enlarging and renovating the houses for sheltering the new members. Thus, it was not surprising to find that people, before the tsunami, had two-and even three- floor homes, with two or more bathrooms, and many rooms, depending on the number of family members, up to eight rooms in some cases (based on *interviews Mo-4, community leader; Mo-8 and Mo-9, ordinary community members*).

There were demographic, geographical and social consequences associated with this self-building tradition. Firstly, the low rate of emigration from the community increased the population size and, due to the limited land available for building new houses, the population density also rose (based on Moussard, 2011, p.56; *interviews Mo-1and Mo-2, community leaders; and Mo-9, ordinary community member*). Secondly, I assume that the poor quality of the construction of houses represented a high risk in the event of earthquakes and tsunamis, a situation which, unfortunately, was observed in the massive destruction of houses in El Morro that could not resist

⁵ Self-built housing for low-income groups in urban areas is common in developing countries. In Chile, this practice is also common in poor communities located not only in urban areas but also in rural areas.

the impact of the tsunami waves in 2010. Thirdly, the social consequences are related to place attachment as I explain later in this chapter.

5.3.2. Socio-economic characteristics of El Morro

El Morro includes around 170 families with a population of over 550. The distribution of the population by age shows that the population under 18 years constitutes 22% of the total population, adults aged 19-59 represent 63%, and those over 60 years old are almost 15% of the total population (Talcahuano City Council, 2010).

In terms of the socioeconomic condition, El Morro is a low-income community with an economy based on catching fish, especially *silverside*, *liza*, *corvine*, *robalo* during all year, and harvesting seafood, especially *machas* depending on the season (Moussard, 2011, p.52). Fishing gives the identity to El Morro; the majority of families have been involved in fishing for many generations. However, due to the high rate of social mobility and the increase of educational opportunities that is taking place in Chile, young people in El Morro have lately opted to follow higher education rather than the family tradition.

Fishermen in El Morro develop a small-scale fishing practice, the majority of them working as artisan fishermen in their small boats. The artisan fishermen represented one of the most vulnerable groups in Chile due to their precarious working conditions; they receive a low income because fishing is variable and the season in which they can catch fish usually lasts only from January to April (Moussard, 2011, p.53). Moreover, the downward trend of fish stock as a result of the many years of overfishing on Chilean coast, and the influence of industrial companies with which artisan fishermen cannot compete, have negatively impacted the income of households in El Morro (based on *field notes* and *interviews Mo-3 and Mo-4, community leaders*).

Fishing is an exclusive male activity. Most of the women in El Morro are housewives, carrying out all household chores and child care. Therefore, patriarchy is prevalent in the community. Nevertheless, some women are engaged in the informal sector such as small grocery shops, tailoring units, food stalls and hairdressing shops. This work carried out by women contributes to household income and could become the main source of income in times of fish scarcity.

Regarding education, low levels of education are common, especially among old generations of fishermen who did not attend school because they started working as fishermen when they were children. Nevertheless, this situation is changing nowadays due to the implementation of a system of mandatory education. Educational institutions are located outside the community boundaries. The central location of El Morro allows students to walk to their schools. Some of them, particularly high school students, have however, to take public transport to travel to their schools, because some of them are located outside the Talcahuano region. Furthermore, there are no nurseries, which are not seen as a necessity because child care is provided by the nuclear or extended family.

Concerning health, due to the low socioeconomic status of the community, people mostly use the public health system. There are no health centres inside the community. Therefore, people have to go to those located in other areas of Talcahuano such as 'CESFAM San Vicente' (20-minute walk) and the 'Hospital Higuera' (30-minute walk) for complex health care needs. These health centres are also easily accessible by public transport.

Finally, religion plays a fundamental role in El Morro as it is associated with one of the most important community celebrations, 'La Fiesta de San Pedro' (Saint Peter's festival) as I explain later in this chapter. In El Morro, most families are catholic, but there is no Catholic church in the community. Devout Catholics attend a church located outside the community, 'La Iglesia Catolica de Todos Los Santos' (All Saints Catholic Church), which is about 1 km-walking distance from El Morro. Despite the fact Catholicism is the majority religion in El Morro, in recent years, the

number of Protestants has increased significantly. The construction of a Protestant church building in the back yard of one of the houses has contributed to this increase.

5.3.3. Resilience capacities before the disaster

In the previous section, I presented the socio-demographic, economic and structural characteristics of El Morro before the disaster. I addressed the *economic* and *structural* resilience capacities, namely, income, employment, local infrastructure and public services.

In the next section, I present the social capacities that I identified in El Morro before the disaster. Among these capacities, I observed new social capacities, specifically place attachment. Furthermore, I noticed some cultural capacities that I did not consider in my theoretical framework, namely community traditions. I also noticed the role of natural resources such as El Morro hill and the seaside. For this reason, I also consider them as resilience capacities. Natural resources were not included in my theoretical framework. However, these resources show that they are crucial to the survival and recovery of the community. Finally, as El Morro was a closed community before the disaster, I did not examine external factors.

a) Place attachment and natural resources

In the theoretical model of community resilience, I studied only the sense of community and not place attachment as resilience capacities. Nevertheless, El Morro showed that this was a crucial capacity for coping with and recovering from the disaster. Therefore, place attachment is a new capacity that I add to in the integrated model of community resilience.

As a consequence of the historic self-building practice in El Morro, people developed a strong sense of attachment to their houses which can be attributed to two reasons. The first one is that residents who build their own houses are proud of their effort. The second one is related to the memories of the many family

generations who have lived in the same house. These special feelings can be observed in the following interview:

... I had the *memories of my father* who lived in this house... We had to face so many things in order to build this house... my husband, son and I, together built this house. I did not know even how to nail but I had to learn. We built this house with our *own effort*, with a great sacrifice because the salary of artisan fishermen is not good... (*Interview Mo-7, ordinary community member, my translation, emphasis added*)

The emotion present in the words of this interviewee reflects the common feeling of the neighbours. Nevertheless, this sense of attachment and subjective aspects such as memories and emotions are not only expressed about their houses but also about the entire community. This is because most people were born and raised in El Morro and many generations of the same family have lived in the same fishing village, in some cases even more than six (based on *interviews Mo-19, academic; Mo-11, municipal officer; Mo-17, NGO practitioner; Mo-8, ordinary community member; Mo-5, community leader; and field notes*). Therefore, they have built a common story and identity together.

People are very proud of living in El Morro. For example, when referring to the place where they live instead of saying 'I am *Chorero*' [The demonym for the people of Talcahuano region], they say 'I am *Morrino*' [The demonym for the people of El Morro]⁶ (based on *interview Mo-1, municipal officer; and field notes*). This sense of belonging is so prevailing among *Morrinos* that many people considered El Morro to be a 'world apart', different from traditional communities and fishing villages (based on *interviews Mo-11, municipal officer; and Mo-19, academic*).

The geography of El Morro contributes to the perception of living in that 'world apart.' It is not uncommon to find in the country a community located at the seaside and at the foot of a small hill. At a first glance, the community cannot be seen from the main highway of the city because it is 'hidden' behind the hill. This special

⁶ In Chile, the majority of people use the demonym of the major city where they live, such as Talcahuano. It is rare to find people who use the demonym of a small-scale community such as El Morro. From now on, I will refer people from El Morro as *Morrinos*.

geography is really appreciated by residents. On the one hand, the hill gives them a sense of protection not only from the external people but also from the wind that produces a 'nice microclimate' in the community (based on *interviews Mo-19, academic; Mo-11, municipal officer; Mo-52, NGO practitioner; Mo-9, ordinary community member; Mo-2, community leader; own observation; and informal conversations*). On the other hand, the seaside is a resource also valued by residents not only because it provides livelihoods to the dwellers but also because it is the main space of social interaction in the community. For example, children use this space as a playground and retired people have adopted it as an informal meeting place (based on *informal conversations and own observation*). The coastline is also the gathering point for major community celebrations such as 'La Fiesta de San Pedro' and New Year's eve (based on *interviews Mo-9, ordinary community member; Mo-1, community leader; informal conversations; and field notes*). These natural resources esteemed by *Morrinos* are part of the identity of the community. After the Chilean earthquake and tsunami, these natural resources have become even more relevant as I show in the following chapters.

Finally, the special feeling of belonging and connection that *Morrinos* have with their houses, history, ancestors, neighbours, relatives and natural resources were crucial in the reconstruction process when inhabitants opposed government's idea of displacing from their community.

b) Social capital and sense of community

In the pre-disaster period, bonding social capital prevailed over bridging and linking. The low rate of emigration from the community contributed to developing internal networks, especially family ties. As a result, these links also contributed to increasing the sense of community. People appreciate the fact that their neighbours are relatives and friends, a situation that is not common to find in communities nowadays.

These strong family bonds created positive relationships among community members. These linkages were not extended, however, to outside networks. For this

reason, El Morro could be considered as a ‘closed community’ before the 2010 event because the majority of social relationships were established inside the community’s boundaries, as illustrated by the following quotation:

The fact is that we have lived here all our lives, this was our only world [El Morro], there was no other world outside... our families were only from here [El Morro], we did not have outside friends, so we have always stayed here [El Morro] (*Interview Mo-7, ordinary community member, my translation*).

The strong bonding social capital and sense of community imposed certain implicit norms in the community. One of this was the control of marriage in the early years of the community. Marriage was expected to take place only between neighbours. For example, an interviewee stated ‘it was strange to see someone getting married to an outsider [person from another community]’ (*Interview Mo-10, ordinary community member, my translation*). As a result, the expansion of family networks in the community was a phenomenon that became more recurrent over time. However, this situation is changing progressively nowadays as a result of the social mobility of young people.

The following anecdote from my fieldwork serves to illustrate the strong family bonds in El Morro. Many duplicated surnames exist in the community. ‘Macaya’, ‘Gutiérrez’, ‘Alvear’ and ‘Vásquez’ are the most common surnames because they were the first settlers in El Morro. The anecdote refers to two brothers ‘Macaya’ who got married to two sisters ‘Gutiérrez’ and each had two children. These four cousins have the same surnames, so people can easily assume that they are siblings. They are also neighbours and three of them are classmates because two of them are twins.⁷ Situations like this are frequent. For example, some children can have more than twenty cousins living in El Morro or a person who can have even more than thirty relatives in the same community. Hence, the family links are numerous (Moussard, 2011, p.52; *interviews Mo-7 and Mo-8, ordinary community members; and field notes*).

⁷ Chileans have two surnames, the first one is the father's first surname and the second one is the mother's first surname. In this example all the children have the same surnames - ‘Macaya Gutiérrez.’ Therefore, at first glance they may be taken siblings but they are only cousins.

El Morro was not only characterised by strong family networks but also by positive ties of friendship. The closeness in the community is so marked that people even identify El Morro as ‘a big family’ (based on *interviews Mo-19, academic; Mo-13, municipal officer; Mo-52, NGO practitioner; Mo-8, ordinary community member; Mo-1, community leader; field notes; and informal conversations*). Consequently, *Morrinos* know each other very well; they know the name, address and other personal details of each member of the community. I noticed this every time I visited the community during my fieldwork. For example, when I was looking for some specific people to interview, *Morrinos* helped me find them, guided me through the community, and even introduced me to the person who I was looking for. They knew exactly who lived in El Morro and who did not.

Despite the positive consequences of bonding social capital in El Morro, there was also a negative effect in terms of the strict social control against outsiders as I explain in the next section. Furthermore, the scarce interaction with external institutions limited the access to resources and support. Consequently, the isolation that El Morro experienced during the first days of the emergency could be explained by this factor as well.

c) Trust

The trust in the community was intrinsically connected to the strong development of family ties. *Morrinos* trusted each other because they were brought up in the same place. Therefore, they knew the values, behaviours and manners of their neighbours. They lived surrounded mostly by relatives or friends. Trust was a natural consequence.

The trust among neighbours led to a strong sense of security in the community. This feeling reached such an extraordinary level that they even left the doors of their houses unlocked and nothing was stolen. Another surprising aspect was that houses did not have window security bars or perimeter fences to prevent burglaries even though they lived in one of the most dangerous cities of the Concepción province (based on *interviews Mo-19, academic; Mo-11, municipal officer; Mo-18, NGO*

practitioner; Mo-8 and Mo-10, ordinary community members; Mo-5 and Mo-2, community leaders; own observation and informal conversations)⁸. One of the interviewees emphasised this sense of security:

Here [El Morro] is not like in other places, here you feel the tranquillity and security... in other places people live in fear, they have to lock the doors and close the windows but here [El Morro] you could sleep with the windows open at night and nothing bad happened [thefts] (*Interview Mo-4, community leader, my translation*).

In order to preserve this sense of security they apply a strict social control against outsiders who represent a threat to the security of the community such as thieves or junkies. When they see strangers, they use to ask them whom they are looking for, and if the person does not answer or lies, is immediately expelled from the community. In some cases they even used improvised weapons such as sticks or stones (based on *interviews Mo-1 and Mo-4, community leaders; Mo-19, academic; and field notes*).

However, during my fieldwork, I found that this sense of security is felt only internally because the external perception is completely different. El Morro has a 'reputation for being unsafe' in the Talcahuano region and even in other nearby regions. *Morrinos* are aware of this stigma. Phrases such as 'people have a bad view of El Morro' or 'they think that because we are poor, it is dangerous here' are common (*based on field notes*).⁹ In my opinion, the closed boundaries of El Morro did not allow outsiders to know the reality of the community.

I observed that El Morro is a safe place and the strict social control is applied only to people who could disturb the security of the community. *Morrinos* are kind and helpful with other external people; they are willing to share their experiences and provide all the information that people require (based on *field notes; interviews Mo-*

⁸ The rate of delinquency in Chile is high, although it is lower compared with other Latin American countries. For this reason, the majority of people secure their houses installing secure perimeter fence and window security bars in order to prevent thieves.

⁹ I have to recognise that I did not have the same prejudice before going to El Morro due to my previous experience working with vulnerable communities as a social worker; however, during my fieldwork, many people advised me several times: 'You should not go alone, it is very unsafe for a woman,' a fact that shows the negative perception that external people have about El Morro community (*my own observation*).

11, municipal officer; and Mo-19, academic). In their own words, ‘we are a friendly community,’ ‘*Morrinos* are nice people,’ and ‘we are hospitable’ (based on *interviews Mo-3 and Mo-5, community leaders; Mo-9, Mo-7, ordinary community member; informal conversations; and field notes*). In Chile, it is common to judge poor communities as a dangerous place; however, the experience of El Morro shows a different reality that breaks down all preconceptions.¹⁰

d) Formal Participation

Participation was another resilience capacity present before the disaster. There were formal and informal forms of participation in El Morro. The formal participation took place in community organisations, while the informal participation was expressed in activities such as community celebrations.

The formal participation was mainly observed in three formal community organisations: ‘El Morro Neighbourhood Council’, ‘El Morro Football Club’ and ‘El Morro Fishermen’s union’.¹¹ The participation in the Neighbourhood Council was reported as low by interviewees before the Chilean disaster, probably because there were no important problems to face in the community at that time (Based on *interviews Mo-1 and Mo-2, community leaders; and Mo-8 and Mo-10, ordinary community members*).

The most popular organisations were ‘El Morro Football Club,’ one of the oldest organisations in the community and ‘El Morro Fishermen’s union.’ These organisations motivated not only the formal participation but also the informal one through the major celebrations of the community: ‘The Anniversary of El Morro’ and ‘La Fiesta de San Pedro’ (Saint Peter’s festival).

¹⁰ This friendliness could be observed clearly in the emergency and reconstruction periods because many outsiders came to the community to offer help or for research purposes. Community members invited people over to their houses to have lunch or dinner, and they answered favourably to all the interviews or enquiries (*based on various interviews with external actors and informal conversations*). I could also validate this fact based on my own experience because even though people did not know me, they provided me the help and support that I needed during my fieldwork.

¹¹ Formal community organisations in Chile are those that are registered with the ‘Municipal Office of Community Organisations,’ have formal statutes and a board.

El Morro Football Club

‘El Morro Football Club’ is an amateur football association. The club was founded in 1941 and it gathers approximately 70 male members of different ages that play in special divisions according to their age. The integration of different community groups motivates the participation of the entire community in every football match. The teams regularly compete against other amateur clubs from Talcahuano and other nearby regions. When this happens the majority of *Morrinos* go to the stadium and, as one interviewee stated, ‘when there is a match no one stay in El Morro, this is a desert’ (*Interview Mo-8, ordinary community member, my translation*), because most families want to support their relatives or friends who are playing. Even though women do not play football in El Morro because football is an exclusive male activity, most women attend the tournaments (based on *interview Mo-7, ordinary community member*). The sense of community is so strong in El Morro that gender exclusion is not a barrier when it comes to supporting their football team, especially when the football players are the women’s children, husbands, fathers, cousins or uncles. Therefore, a simple local match becomes one of the greatest events for all *Morrinos*.

The sponsors of the club are mainly affiliated members that have to pay a monthly fee. The community also contributes with donations when it is required in some events organised by the club. For example, the club regularly organises raffles, bingo and music events in order to collect money for buying football clothes, funding the registration of championships, and travel expenses. The municipality also funds the club, less regularity, especially when the club has to compete in other cities.

The relevance of the ‘El Morro Football club’ is that, apart from being a popular recreational space, it has become the most important social space for preserving the identity of El Morro. Firstly, the club’s anthem which is sung in every contest, has been adopted as the anthem of the community and is very well-known by each

Morrino (based on *interview Mo-19, academic*)¹². Secondly, the anniversary of the community is organised by this sport club.

Fishermen's union

El Morro was the first fishing village in the country to have a formal Fishermen's union (based on *interview Mo-3, community leader*). The Fishermen's union was founded in 1941 and is composed of around 50 members. As fishing is the main economic activity in El Morro, this organisation has been relevant for channelling the problems of fishermen and ensuring their work rights. The main objective of this organisation is to represent El Morro's fishermen in the Regional Fishermen's association (SERNAPESCA). It also has the purpose of providing social and welfare assistance to its affiliated members. Apart from these formal roles that are explicit in the statutes of the organisation, there is an implicit role, the celebration of 'La Fiesta de San Pedro' (Saint Peter's festival), the most important festival in El Morro.

e) Informal Participation and traditions

There are three main events that I identified in my fieldwork that engaged the informal participation of the majority of community members. These events are also related to traditions, a new resilience capacity that I found in El Morro. The events can be classified as planned and unplanned. 'The Anniversary of El Morro' and 'La Fiesta de San Pedro' are planned spaces of participation organised by 'El Morro Football Club' and 'El Morro Fishermen's union' respectively. The unplanned activities are those that emerge spontaneously in major national celebrations such as New Year's eve. Both planned and unplanned celebrations are spaces generated not only for recreational purposes but also for preserving the history and culture of El Morro.

¹² In Chile, each major city usually has an anthem. It is used rarely however, and only the national anthem is played in the majority of official events. Therefore, having an anthem in a small scale community such as El Morro is an atypical situation in Chile.

The anniversary of El Morro

This celebration takes place every five years, depending on the profit secured by fishermen in the previous fishing season. This activity is a community party attracting the majority of local residents. For this celebration, people decorate the streets and have several recreational activities for different age groups. The festival finishes with the coronation of the queen (based on *interview Mo-10, ordinary community member*).

La Fiesta de San Pedro (Saint Peter's festival)

La 'Fiesta de San Pedro' is one of the most important religious celebrations in Chile. It takes place on 29 June in honour of Saint Peter, the patron saint of fishermen. In El Morro, the festival starts with a catholic mass in the community centre followed by a spirited procession through the community carrying a big icon of Saint Peter which belongs to the entire community. People also carry small icons of the Saint belonging to their families. The procession continues through the coastline where fishing boats decorated with flowers and candles wait for the big image of Saint Peter which later is put in one of the best-adorned boats. After that, the boats sail around the Talcahuano bay, while the crew thanks to Saint Peter and to the sea for providing the livelihood for the community. Finally, back on terra firma, the crew of every boat offers food and drinks to the entire community. The celebration is expected to last until late night (based on *Mo-19, academic and field notes*).

The whole community celebrates 'La Fiesta de San Pedro' irrespective of creed. In El Morro there are some conflicts between Catholics and Protestants. Although this festival is eminently Catholic, Protestants participate in both the religious ceremony and the subsequent celebration (based on *Mo-19, academic, and field notes*) because, as they put it, 'this is the party of all *Morrinos*' (based on *interviews Mo-19, academic; Mo-11, municipal officer; Mo-18 and Mo-52, NGO practitioners; Mo-6 and Mo-8, ordinary community members; Mo-4, community leader; field notes; and informal conversations*). Therefore, this feast has various symbols that

unveil the spirit of El Morro and community resilience. It represents a space of integration, faith, union, cooperation and organisation. The place attachment and sense of community are expressed at their maximum level; the gratitude to the sea, the love for their fishing village and the pride of being fishermen, are the most important elements found in this festival.

New Year's Eve at sea

Morritos wait until midnight along the coastline in order to watch the Talcahuano fireworks displays. The good geographical location of El Morro gives a panoramic view of the show. The families start counting down to New Year's Day in the last minute before the last night of the year ends and the New Year begins. As soon as the clock strikes midnight, people greet each other and everyone exchanges hugs and kisses. After the show finishes, people come back to their homes and the celebration continues through the night until the morning of New Year's Day (1st January). The doors of the houses remain open during all night in order to receive the New Year greetings from relatives, neighbours and friends (based on *interview Mo-3, community leader*).

The celebration of New Year's Eve has become a tradition in El Morro. Residents gathering together in front of the sea waiting for the New Year illustrates the level of union and trust among neighbours, the strength of internal networks and the positive relationship with the sea.

f) Community Leadership

Before the 2010 Chile earthquake and tsunami, leadership positions in El Morro were predominantly held by men. Male leaders were the representatives of all formal organisations in the community, including 'El Morro Neighbourhood Council', 'El Morro Football Club' and 'El Morro Fishermen's union'. This situation could be explained by the predominant role that men play in fishing communities; they are

responsible for the household livelihood, while women are usually housewives, responsible for household chores and childcare.

The leaders in the pre-disaster period were typically older fishermen belonging to the lineage of first settlers in El Morro, the most important families in the community. Being fishermen, and having a long trajectory and tradition in the community, were implicit criteria that influenced the selection of the representatives of the community (based on *interview Mo-19, academic*).

g) Cooperation

I finish this chapter with one of the most remarkable social capacities that I found in El Morro, cooperation. The illustrative cooperative strategies that I observed before the 2010 disaster were the examples of an informal women group called ‘Palomitas Blancas’ and the ‘Solidarity in Funerals’.

- Palomitas Blancas (White doves)

‘Palomitas Blancas’, as they call themselves, is an informal group composed of around 12 middle-aged fishermen’s wives. They started to function approximately 10 years ago motivated by economic needs. At that time, the fish stocks began to decline as a result of overfishing, situation that negatively impacted the income of families. However, this crisis was seen as an opportunity for these women who spontaneously decided to do something in order to mitigate the effect of this slump. They began cooking typical Chilean food and selling it as a delivery business to the community. The majority of *Morrinos* supported them and bought their products. Therefore, this success encouraged them to develop this activity more frequently, twice or more times per month.

Although ‘Palomitas Blancas’ is not a formal group in the sense that it is not legally registered as a community organisation with the City Council, in practice, the group act as a formal group, and could be considered to be a quasi-formal group. They have weekly meetings to organise their activities and but also to have a recreational

space. They have dinner together, plan the activities and run an internal raffle for fundraising. The prizes for the raffle are groceries donated by each member; these prizes have to be inexpensive goods that contribute to the food basket of the families. The items vary weekly. For example, one week, each member donates one kilo of rice, the next week, one kilo of sugar and so on. In addition, members have to pay a low monthly fee. All the money collected during the year in the different activities, is used to buy a large amount of non-perishable food items which are divided equally among members. These items are expected to contribute to the subsistence of their families over the year (based on *interview Mo-7, ordinary community member*, and *my own observation in a regular meeting*).

This women's association is defined as a 'horizontal group' by their members in the sense that they do not have formal leaders. As one interviewee stated, 'we are all leaders here' (based on *interview Mo-7, ordinary community member*). However, there is one lady who informally assumes the role of treasurer in the group. This is a necessary role, considering the economic purpose of this organisation (based on *interview Mo-7, ordinary community member*, and *my own observation in a regular meeting*). It is important to mention the role of this lady because the simple treasurer in this small organisation became the greatest leader that El Morro ever had. Her name is Cecilia Vallejos, the person who led the emergency and reconstruction period in El Morro after the Chilean earthquake and tsunami.

This group is a clear example of resilience in El Morro because, regardless of the economic adversities, these women have learnt how to reinvent themselves, turning a problem into an opportunity. 'Palomitas Blancas' is not only an exceptional case of cooperation but also a good example of self-management, organisation and engagement, key elements for making this group a successful experience of resilience before the 2010 disaster.

- *Solidarity in Funerals*

I identified another expression of cooperation before the disaster, in the context of funerals. Summarising the set of actions carried out by *Morrinos* when a resident dies, I have decided to call this experience ‘Solidarity in Funerals’.

The death of a loved one is never easy and due to the strong bonding social capital in El Morro, the death is felt throughout the community. Making funeral arrangements can be very stressful and daunting for most families. For this reason, in this difficult time, *Morrinos* always come together to help mourners. Residents collect money to pay funeral expenses which are very costly for the poor families, with each family donating approximately one pound or more, depending on the socioeconomic condition of the household. In El Morro, funerals are usually held in the house where the deceased used to live or in the community centre, depending both on the size of the house and the number of people who attend the funeral.

In El Morro, funerals are usually massive due to the strong family connections. Serving a large number of people is not an easy task for families. For this reason, the money collected is used to feed attendees. *Morrinos* cook and serve food and drinks to people in order to ‘lighten the pain load of family’ (based on *interviews Mo-9 and Mo-6, ordinary community members; Mo-5 and Mo-2, community leaders; informal conversations*). This could be defined as a ‘volunteer catering service’ provided by neighbours.¹³ This is not formal catering service because they do not have knowledge or experience of catering. Therefore, they adapt the service depending on the requirements of the family and the money collected. They also improvise the service, trying to make the most of the limited resources. For instance, they use the cutlery of the household and when this is not enough, they borrow it from other neighbours. They also borrow chairs and tables.

¹³ The funerals in Chile, especially in rural areas or in some poor urban neighbourhoods, are usually held in the house of the deceased’s family. It became a tradition to provide a large amount of food and drinks to the people who attend the funeral. However, this service is provided by the close family to attendees, not the opposite.

It was surprising to find that men assume the role of cooking and serving people, while this traditional role in all other social spheres in El Morro is assumed exclusively by women. However, this phenomenon can be understood from the perspective of the predominant male leadership existing in El Morro before the disaster. Men always organise the major events in the community, and a funeral is not an exception. By contrast, it is considered to be an important event that requires the presence of men, even though they have to assume the traditional role of cooking. It is important to mention that apart from cooking also there are other household chores that men usually do in funerals in order to give relief to the grievors. These roles are explained more clearly in the following quotation.

...We do something unique here [El Morro], when someone dies, we contribute with one thousand pesos [one British pound approximately] and we give it to the mourners. We serve in the funeral; we provide tea, coffee, sandwiches throughout the night. We cook, wash the dishes, we clean the house, bring chairs, we even install tents if it is necessary...we organise everything, so the mourners do not have to worry about anything and they can live their pain quietly [*Interview Mo-5, community leader, my translation*].

Without distinction, this service is provided to anyone who has lost a loved one, irrespective of their economic status. This was emphasised by one interviewee: ‘...when someone dies we donate money and it does not matter if the mourners are rich or poor, we give the money anyway’ [*Interview Mo-8, ordinary community member, my translation*]. This means that no one rejects this service, it is accepted by everyone, even if the family has money for paying the funeral expenses. Therefore, more than a charitable action, it is seen as a tradition that has to be respected. *Morrinos* refer to this tradition as ‘something unique that only happens in El Morro’ (*Interview Mo-5, community leader, my translation*). They proudly state that they do not know other communities with the same tradition (based on *interviews Mo-8, Mo-7 and Mo-10, ordinary community members; Mo-3, community leader; and field notes*). This tradition has become part of their identity and they are proud of this fact.

The cooperation among *Morrinos* was not only manifested in funerals but also in other situations, such as illness or fire emergencies. When a resident is diagnosed

with a critical illness such as cancer, people organise community events including bingo or raffle to collect money, and help families pay medical bills and the costs associated with the treatment. *Morrinos* pointed out that in the event of fire they are able to extinguish the fire before firemen arrive at the scene. This fact also makes them feel very proud (*based on interview Mo-3, community leader*). They assume this role so responsibly that even just before the 2010 disaster, *Morrinos* raised money for buying fire hoses in order to have more equipment to extinguish the fire more effectively and, thereby, reduce the fire damage.

Finally, the cooperative actions observed in El Morro show the intrinsic union and sense of community present in El Morro before the disaster. Residents are able to recognise this cooperation, as illustrated by one interviewee ‘Here we are all generous; we can have differences but we always help each other’ (*Interview Mo-10, ordinary community member, my translation, emphasis added*). This solidarity makes them feel ‘special’ and ‘different from other fishing villages’ (based on *interview Mo-3, community leader, and field notes*). The same view is also shared by other actors such as municipal officers, academics and practitioners from NGOs who recognised the solidarity and cooperation existing in El Morro (based on *interviews Mo-11, municipal officer; and Mo-19, academic*).

Conclusions

The objective of this chapter was to present a general context of the 2010 Chile earthquake and tsunami. This chapter is in line with one of my main principles of community resilience, contextualisation. Even though, in my thesis, I focus on small-scale communities, the external context presented in this chapter is useful to understand the impact of the 2010 Chile earthquake and tsunami on community resilience.

The 2010 Chile earthquake and tsunami impacted upon different levels in the country, including national, regional, municipal and community level. The analysis at these levels offers new insights into the dynamic of the El Morro case study after the impact of the disaster. The long history of disasters in the country was not enough to prevent the great material damage and deaths caused by the 2010 event. The mistaken tsunami alarm, centralisation and lack of coordination among institutions were the hindering factors observed at the national and regional levels which had devastating consequences for community resilience. The slow emergency response of government led to chaos and looting, unveiling the *dark side* of resilience. Furthermore, the top-down approach observed in the emergency and reconstruction periods from the national level negatively affected the internal dynamic of El Morro as I show in the following chapters.

The role of the local government is essential in disasters contexts as it the closest level to the community. Nevertheless, the destruction of Talcahuano city council's building and slow emergency response show that in disasters of great magnitude, local government can lose power, functions and capacities to deal with the event. Consequently, communities might find themselves alone and excluded from external aid during the first days after a disaster takes places. This period of isolation that communities might experience, can bring opportunities for empowerment. In this scenario, communities need to activate their own resources to deal with the event as El Morro showed. How successful they are in dealing with the catastrophe depends on several factors, but my research suggests that community resilience is the most significant. The relationship between the community and local government

was crucial in my research, municipal intervention proved to be a hindering and enabling factor at the same time as I explain in the following chapters.

The analysis of the context of El Morro also unveiled the prevalence of *resilience capacities* before the disaster, namely economic, structural and social capacities. I also observed new capacities that I had not considered in my theoretical framework, including place attachment, traditions and natural resources. The role of these resilience capacities was crucial to deal with the 2010 event. The disaster changed the history of El Morro and the dynamic of the community analysed in this chapter took a different turn as I explain in Chapter 7.

In the following chapters, I analyse the data collected through primary research in the El Morro case study. Each chapter encompasses a different stage of the disaster, including the immediate emergency, the winter emergency and the reconstruction periods. I noticed that the changes in community resilience were uneven in each stage of the disaster, an observation that leads to one of the main findings of my research, the *variability of community resilience*.

CHAPTER 6

THE IMMEDIATE EMERGENCY: SURVIVING

Introduction of Findings

In the following 3 chapters, I present the main findings of my research according to time periods, including immediate emergency, winter emergency and reconstruction. These periods are in line with the periods set by the Chilean government in the Reconstruction Plan that I introduced in the last chapter. I decided to divide my chapters according to time periods because I observed that resilience capacities radically changed from one period to another. This observation led me to one of the main findings of my research: **community resilience is a variable capacity**. This means that the resilience capacities that are identified in a certain period in the community will not necessarily be present in another moment, or that they can be present but act in different ways. Similarly, the external factors that could have enhanced or undermined the resilience gradually vary.

The 2010 Chilean earthquake and tsunami not only caused physical damage in El Morro but also deeply impacted the social dynamic of the community. For the first time in history, *Morrinos* had to cope with a disaster of such magnitude. In this extreme situation, the resilience capacities observed in the pre-disaster period were tested. What happened to the social capacities that were proudly reported by *Morrinos* in the period before the disaster? Did the disaster change the social relationships in the community? People's behaviour and social relationships observed during the fieldwork varied enormously in the three main periods due to the influence of external factors that I discuss in the following three chapters.

I present the data in relation to my research objectives. Therefore, I analyse the specific resilience capacities that contributed coping with the disaster in each period (first research objective). Similarly, I examine the influence of external factors that enhanced or undermined the resilience capacities (second research objective). The

main interactions among resilience capacities and external factors are explored to develop later the integrated model of community resilience. I believe it important to mention that the presentation of my data overlaps. As I stated in Chapter 3, in one of my main principles, resilience is a dynamic and flexible capacity and, therefore, capacities and external factors affect one another producing several interactions at the same time.

The following three chapters aim to present my main findings according to the theoretical model developed in Chapter 3. I present the data in a narrative style in order to ‘tell the story of El Morro,’ the main events, actors, external factors, resilience capacities and interactions that took place at every stage of the disaster. This provides a better understanding of the variability of community resilience over time. Furthermore, the chapters are based mainly on the data collected from the research methods, including interviews, observations, informal conversations, documentation and social media. I do not use specific theoretical references at this stage because this is my purpose in Chapter 9 where I design an ‘Integrated model of community resilience’ in which I integrate both the theoretical model of community resilience and the empirical evidence from the following three chapters.

Having clarified the principle that guided the structure of my findings, in the next section I present the chapter that addresses the first stage of the disaster, which is the *immediate emergency*.

‘Surviving’ is the only word that can best describe this period. *Morrinos* survived five days isolated in the hill without external aid from the government or emergency organisations. This period is extremely interesting due to the lack of any external intervention. *Morrinos* had to rely on their own resources and capacities in order to cope with the worst disaster in their history.

The strategies carried out by *Morrinos* were crucial for surviving the first days after the disaster. Self-evacuation, community kitchens and security guards were the most important. The resilience capacities found in the pre-disaster period, especially social capacities, were also involved in every action performed by *Morrinos*.

Additionally, new resilience capacities were also unveiled in this period, which show the latent resilience capacities existing in El Morro, including local knowledge and other cultural capacities such as language and beliefs. Some external factors also emerged, challenging these capacities and the stability of El Morro.

The data presented in the next section was organised around two major events: self-evacuation and the first five days after the disaster, a period that I consider to be the *immediate emergency* experienced by El Morro.

6.1. Self-evacuation

In the early morning of the 27 February 2010, most families in El Morro were sleeping. Students were still in annual leave and some fishermen were returning at home after work. It was a normal day for all *Morrinos*. At 3.34 am, however, this calm was interrupted by a major earthquake of magnitude 8.8, the sixth largest earthquake recorded in the world. *Morrinos* felt immediately the danger of an imminent tsunami. Each family tried to pick as much emergency supplies as possible, including blankets, tents, food, water, and flashlights. Some families even took the precaution of shutting off electricity and gas (based on *interviews Mo-7, ordinary community member; and Mo-1, community leader*). The next quotation shows the impression of a resident during the impact of the earthquake.

...I could not stand up, it was so strong, and this loud noise, I cannot forget it...I opened the window of my house and I started shouting to my neighbours, Go to the hill!, Go the hill!...because I work on the sea and a fisherman know that after a strong movement, a *salida de mar* [tsunami]¹⁴ will come ...We took some blankets from the window and we run away to the hill...(Interview *Mo-4, community leader, my translation*).

¹⁴ Instead of using the word *tsunami*, *Morrinos* use the word *salida de mar* (output of sea) to refer to the series of waves caused by powerful earthquakes. This is a jargon generally used by fishermen. The term *tsunami* became more popular after the disaster due to the mass media influence that reported this event as a *tsunami*. Despite this, *Morrinos* still keep their jargon as part of their tradition and local culture.

As it could be observed in the previous quotation, the risk of an imminent tsunami was evident for all *Morrinos*. They reacted naturally and as one interviewee stated, ‘we ran away to the hill, without thinking, it was innate’ (*Interview Mo-7, ordinary community member, my translation*). However, when they arrived at the main entrance of the hill they realised that the gates were locked. They had to quickly organise a group of men to kick down the gates to get up the hill. At the same time, *Morrinos* heard siren sounds, and emergency and local authorities calling off a tsunami warning by loudspeakers. People were advised ‘to return home because there was not tsunami danger’. Fortunately, *Morrinos* did not listen and continued the evacuation. They were quick to react and in less than 20 minutes families evacuated the community and gathered together on El Morro hill.

Many neighbours were trapped in their houses because the doors were jammed after the earthquake but *Morrinos* did not abandon them. They put their life in danger to save their neighbours, and they did not leave the community until all community members were safe on the hill as illustrated by following quotation:

...After my husband, along with other neighbours rescued my mum, he said ‘Go to the hill!’ ‘I said yes, but you have to go with us’... He told me that he could not go with us because he could hear people trapped in their houses because they could not open their doors; they were shouting and pleading for help...I cried and I told him ‘But you have to go with us! You always say that we are a family!’ He went to rescue a pregnant woman who was alone with her mum; they could not open the door, so they had to rescue her from the window... (*Moussard, 2011, p.59, community member interview*)

Many women were alone because their husbands were fishing on the high sea which might have been the situation of the pregnant women mentioned in the previous quotation. Yet, due to the solidarity of the community, they were helped and rescued by their neighbours.

Once all *Morrinos* were safe, some men came back to the community trying to rescue some goods such as cars, food and blankets. The most experienced fishermen went to observe the coast. As soon as they noticed the arrival of the first tsunami wave, they immediately ran away to the hill and remained with their community until the afternoon of the next day (based on *interviews Mo-11, municipal officer; Mo-*

19, academic; Mo-7 and Mo-10, ordinary community members; Mo-1, community leader; field notes; and informal conversations). Once on the hill, the formal leader of the Neighbourhood Council tried to verify that all *Morrinos* were alive and safe:

... We were at the top of the hill, there were 600 people approximately, all the families and... I do not like to remember it... [tears in his eyes] and I stood up in the fort and I said to my neighbours 'Families of El Morro, counted themselves in order to see if we are all here or if someone is missing', so each family was counted one by one.... Then, we calculated and we were all safe, no one was seriously injured, some neighbours had only minor injuries, but no one died... (Interview Mo-1, community leader, my translation).

6.1.1. Resilience capacities in the self-evacuation

Luckily, no one died in El Morro; they were able to carry out a successful evacuation process. The social capacities identified in the pre-disaster period implicitly guided all community actions and strategies that took place at this crucial moment. These strategies brought into action a variety of resilience capacities, including cooperation, participation, social capital, trust and sense of community. However, a new resilience capacity related specifically to natural disasters emerged at this moment, the local knowledge.

Regarding the capacities identified in the pre-disaster period, cooperation was the crucial one because *Morrinos* were able to quickly organise the evacuation after the earthquake. In the absence of the State, they had the autonomy of evacuating themselves without external help. They spontaneously organised themselves, with men assuming leadership at all stages. They were responsible for keeping the family safe; they guided the evacuation process until their families and all *Morrinos* were safe on the hill. Therefore, the patriarchy identified in the pre-disaster period was also present in the evacuation. The division of labour was also crucial; they had to perform specific tasks and roles according to their experience. For example, a group of men were in charge of rescuing neighbours, others returned to the community to rescue some goods, and the most experienced fishermen had the important role of

‘observing the sea’ and predicting the arrival of the first tsunami wave despite the risk that it implied.

The fact that *Morrinos* know each other very well facilitated the cooperative actions, especially the rescue of neighbours. They knew exactly who lived in every house of El Morro. Without this knowledge, it would have been impossible for them to rescue their neighbours. They put their lives at risk; rescuing a pregnant woman is just one example of the solidarity that arose in the middle of the emergency. There are also other examples that were registered during my fieldwork such as helping elderly and disabled people to arrive at the hill (based on *interview Mo-6, ordinary community member*). Therefore, the strong bonding social capital existing in El Morro also contributed to the quick evacuation.

The participation of all community members was also important; all *Morrinos* without distinction were involved in the evacuation process which allowed them to save their lives. Trusting each other contributed to this engagement; relying on their local knowledge and their community leaders rather than the mistaken tsunami alarm was vital. The sense of community was palpable; El Morro behaved as a ‘big family’ as they said. They looked after all the members through the entire evacuation process. Each family checked that their neighbours were safe and sound at the top of the hill, and fishermen did not leave the community until all *Morrinos* were evacuated.

The cooperation, participation, social capital, trust and sense of community were important resilience capacities which contributed to the successful evacuation process. However, the local knowledge was also crucial to ensure the survival of the entire community. Even though the possibility of a tsunami was dismissed by authorities, fishermen trusted their experience and evacuated to the hill. This action saved the lives of all residents. ‘No one died in El Morro’ is the common phrase that is proudly repeated by *Morrinos* any time when they share their histories about the devastating night of the disaster (based on *interviews Mo-19, academic; Mo-11, municipal officer; Mo-52, NGO practitioner; Mo-6, ordinary community member; Mo-1 and Mo-3, community leaders; field notes and informal conversations*).

Local knowledge is an innate capacity that helped *Morrinos* respond in a timely and effective manner. This capacity probably remained in a dormant state for a long period before the disaster and was activated in the face of the emergency. In the next section, I discuss this capacity in more detail in order to uncover its particular characteristics and the important role that it played in the disaster culture of El Morro.

6.1.1.1. Local Knowledge

In my theoretical framework, I mentioned the risk knowledge and assessment as part of the social capacities. However, when facing the emergency, El Morro showed that risk knowledge is not the best term to define this capacity. As I explained above, the natural reaction of all *Morrinos* to take refuge on the hill after the Chilean earthquake is part of the local knowledge in which fishermen's experience and collective memory of past disasters play the most important role. Therefore, this knowledge is connected with the cultural components of the community. For this reason, I decided to call it local knowledge instead of risk knowledge and assessment. I argue that local knowledge is more suitable for a new category of resilience capacities that I call *cultural capacities*. Although I did not include this category in my theoretical framework, it was crucial to the survival and recovery of the community. Cultural capacities include the *traditions* that I observed in the pre-disaster period and the *local knowledge* that I discuss below.

In the next section, I focus on the main components of local knowledge in El Morro, including fishermen's experience and collective memory of past disasters which unveil other capacities such as language and beliefs.

a) Fishermen's experience

In terms of the fishermen's experience, the oral tradition was crucial. The warning that after a major earthquake strikes they have to evacuate to high ground has been transmitted from one generation to another:

...I remember that our parents always told us: ‘When a strong earthquake comes that does not allow you to stand up, you have to run away immediately to the hill, and you do not have to come back home... in the hill, all the community will be gathered, we will meet there’... (*Interview Mo-7, ordinary community member, my translation*).

Fishermen’s experience constitutes the basis of this local knowledge. This experience made them almost instinctively go to the coast and observe the ‘behaviour of the sea’, as they put it, after the impact of the earthquake. They were able to notice natural warning signs of a tsunami such as the water level drop and a loud roaring sound from the ocean:

...We checked out that no one stayed in the community and we went to observe the sea... we made fire using tires because it was dark and we wanted to see the sea... the canal was dried and then it was full of water again, when I suddenly heard a rattle noise and I shouted: ‘The sea is coming in!, We have to run away!’, I was the last one running away, the sea was arriving at my knee when I reached the gate [the main entrance to the hill]... (*Interview Mo-4, community leader, my translation*).

Furthermore, they were able to observe other natural signs which although are not considered to be reliable signs by scientists, were important signs for fishermen. ‘Mice and rats were getting away to the hill’ and ‘the sea was boiling after the earthquake’ were the observations of one of the most experienced fishermen in El Morro (*Interview Mo-6, ordinary community member, my translation*). As it is unusual to see high sea temperatures at such levels and rats and mice leaving their hiding places to take refuge on the higher ground, he deduced immediately that ‘something bad will happen’ (*Interview Mo-6, ordinary community member, my translation*) and he warned other fishermen about the imminent disaster. Reliable or not, these signs were taken seriously by fishermen and were helpful for predicting the tsunami.

Fishermen feel proud of the expertise they demonstrated after the earthquake. They particularly acknowledge their ability to predict a tsunami through the observation of the sea and express their pride: ‘We are fishermen, so we know the sea’ (*Interviews Mo-1 and Mo-4, community leaders; and Mo-6, ordinary community member*). The knowledge of fishermen is recognised and respected by all *Morrinos*,

which was evident in the crucial moment when they heard the mistaken announcement from authorities who were calling off the tsunami alert. They completely relied on the experience of their fishermen, on their own *beliefs*, and ignored this official alarm and continued the evacuation to the hill. ‘We did not believe in this alarm, we knew that a tsunami will come’ (based on *interviews Mo-8, ordinary community member; Mo-3, community leader; field notes and informal conversations*). If they had not trusted their own experience, it would have been impossible for them to save their lives:

...In other communities, people died because they heard the warning from authorities: ‘Go back home, there is no tsunami risk!’ So people came back home and died. In El Morro, no one returned to the houses until the next day and no one died... (*Interview Mo-3, community leader, my translation*)

It was impressive to observe that fishermen not only had the general knowledge that a major earthquake can be followed by a tsunami but also specialised knowledge related to the tsunami danger period. They were aware that the first tsunami wave may come within minutes or even after several hours:

...We were aware that the earthquake will bring a tsunami, we did not when; it could be immediately or after many hours, but it will come... (*Interview Mo-7, ordinary community member, my translation*).

This specialised knowledge proved to be right. According to official reports, at least four tsunami waves arrived in Talcahuano at different times between 03:52 am and 06:40 am (NOAA, 2012). *Morrinos* remained together on the hill and did not come back home until the afternoon of the next day when the tsunami danger had passed. Therefore, this local knowledge allowed saving the lives of the entire community. Unlike other communities, no one died in El Morro.

b) Collective memory of past disasters

Another crucial variable that also contributed to the survival of the community was the strong collective memory of past events. The tsunami risk was very well known by the community. In their own words, ‘We knew that someday a tsunami will come

here' (based on *interviews Mo-7, Mo-8 and Mo-9, ordinary community members; Mo-1, Mo-3 and Mo-4 community leaders; and informal conversations*). *Morrinos* grow up with the awareness of a tsunami risk because their parents and grandparents transmitted them their experiences of past disasters. The community actions carried out by *Morrinos* in these events led them to develop an 'implicit protocol' about how to effectively cope with earthquakes and tsunamis. This protocol was part of the daily conversations: 'In my family we always talked about what to do in case of earthquakes, we have to run away to the hill' (*Based on interviews Mo-1 and Mo-3, community leaders; Mo-6 and Mo-7, ordinary community members*). They developed a common language to understand the protocol of action in case of earthquakes. Therefore, they had a culture of disaster preparedness previous to the disaster which included specific procedures about how to safely react to such events.

In general, the memories of previous disasters are recalled by the eldest members of the community who experienced these events when they were children or teenagers. Those who were not born at that time received this knowledge from their ancestors. They have memories of previous disasters in which the timely reaction of the community was the same. According to residents, El Morro was hit by two other earthquakes that affected the country in the past century, the 1960 Valdivia earthquake and the 1985 Algarrobo earthquake. In both disasters, *Morrinos* evacuated to the hill and, similarly to the 2010 disaster, there were no casualties. Furthermore, the role of fishermen was the same; they were in charge of observing the sea after the earthquake:

...In 1960, we had a tsunami and all of us ran away to the hill and in 1985 we had another one and we went also to the hill... I have lived many things here... and as usual, fishermen were waiting on the beach, observing the sea... (*Interview Mo-6, ordinary community member, my translation*).

They also remember that the tsunami did not come immediately, as one interviewee stated: 'In 1960 all day had passed and the sea did not come, it came in the afternoon of the next day' (*Interview Mo-10, ordinary community member, my translation*). The delay of the first tsunami wave in 1960 could be the experience that gave to *Morrinos* the knowledge about the tsunami danger period.

Therefore, the proper reaction of the community in 2010 reveals that knowledge about successful past experiences in dealing with disasters. Due to their strong oral tradition, *Morrinos* have preserved a culture of disaster preparedness through generations. They have been able to keep their history alive; the memorised stories of past catastrophes have helped them build a consistent *system of beliefs* and practices of surviving in the face of natural disasters. They have relied on this knowledge that has been passed from person to person from many decades ago. It is part of their collective memory, a precious internal resource for building resilience in disaster-prone areas such as El Morro.

In conclusion, local, place-based knowledge about natural disasters based on fishermen's experience and memories of past disasters, was the crucial resilience capacity that literally saved the lives of *Morrinos* in 2010. They did not have previous tsunami preparation training by external institutions such as local government or NGOs. Their local knowledge was one of the critical factors that made them one of the most successful communities countrywide in facing the immediate emergency.

6.2. The five days after the disaster

The social and cultural resilience capacities along with the hill, the natural resource that saved the lives of people, were important in facing the immediate emergency. The successful evacuation process revealed the strength of the community when facing disasters. Evacuating to the hill was not something new for *Morrinos* but the implicit plan orally transmitted from one generation to another which worked perfectly in El Morro. However, they did not have any protocol for facing the aftermath of the worst natural disaster in their history. They never expected the bleak scenario of the next day after the disaster. Surviving the impact of the earthquake and tsunami was just the beginning of the journey for *Morrinos*.

The devastating tsunami waves in 2010 and the massive destruction of the community have led to an unprecedented catastrophe for *Morrinos* which cannot be compared with the minor tsunami waves in 1960 and 1985 which did not do much

damage (based on *interviews Mo-19, academic; Mo-18, NGO practitioner; Mo-9 ordinary community member; Mo-2, community leader; and informal conversations*). They expected the tsunami to flood the houses as it happened in the previous disasters. For example, in 1960, the tsunami waves inundated the houses only with one-metre high waves and the houses resisted; ‘none of the houses fell’, as one of the *Morrinos* remembers (*Interview Mo-10, ordinary community member, my translation*). However, in 2010 the enormous waves reached heights of 2,34 metres (7,7 feet) (NOAA, 2012) destructing and crushing everything in their path, including houses, cars and ships. Houses completely collapsed and many of them were washed away by the tsunami hundreds of meters from their original position. A big fishing boat called ‘Don Renato’ stranded in the main street of the community after being swept inland by tsunami became the symbol of the destruction.¹⁵ El Morro was completely destroyed by the tsunami.

Only the words of the residents can fully express their feelings when they went to see their houses for first time: ‘Our community disappeared, we lost everything’ (*Interview Mo-10, ordinary community member, my translation*), ‘It was horrible’ (*Interview Mo-3, community leader, my translation*), ‘It was a nightmare’ (*Interview Mo-7, ordinary community member, my translation*), ‘I never expected to see such destruction’ (*Interview Mo-4, community leader, my translation*). The following quotation shows the memories of one of the residents about this moment:

...The next day, I went down in order to see my house, but a neighbour who was coming back after seeing his destructed house stopped me and told me: ‘Please, do not go! Do not go!’ But I went anyway... When I arrived there, I saw that everything was destroyed...I wanted to die... Everything was destroyed, my house, everything that belonged to my mom, everything... It was catastrophic...(Interview Mo-6, ordinary community member, my translation)

The tsunami waves not only destroyed the houses but also had a devastating impact on the livelihoods of *Morrinos*; fishing boats and gears were completely destroyed,

¹⁵ The following video shows the ‘Don Renato’ ship which became one of the main sources of conflict in the following months after the disaster.
<https://www.youtube.com/watch?v=CSXSXAnWiOo>

lost or seriously damaged. The artisan fishermen suffered extensively because they lost their jobs and could not sustain their families. Economic and structural resilience capacities were greatly affected by the disaster. Finding themselves homeless and jobless suddenly was not easy for *Morrinos*. This critical situation led to feelings of anger, impotence, despair and anguish. The future was uncertain for them as it can be observed in the following YouTube testimonial:

...The situation is very bad, our houses are completely destroyed and apart from that we lost our workplaces because most people here work in the fishing area...all fishing companies were destroyed, the boats ran aground, the houses are all destroyed, so we do not have anything, we were left with nothing, no house and no job. My main concern is the job because if you have a job, you can start building your house again slowly, but without a job you cannot do it, this is terrible! The job is the most relevant for starting over again..., we are all hardworking people here, and we all depend on the sea for living...this is horrible (Chile se levanta, 2010a, my translation).

The tsunami not only caused extensive physical damage but also affected the *place attachment*. It was not easy for them to see ‘the houses built with their own hands’, ‘the house that sheltered their ancestors’ practically devastated (based on *field notes* and *informal conversations*). Even worse, they could not rescue their historical photos and artefacts that connected them with their past, their history; tsunami waves destroyed everything. ‘This experience changed their lives forever,’ as they say. The disaster has become a turning point in the history of *Morrinos*. According to them there is a period before and after the disaster (based on *interviews Mo-10 and Mo-7, ordinary community members; Mo-3 and Mo-1, community leaders; field notes; and informal conversations*). The disaster left an indelible mark on the community.

The special geography of El Morro played a contradictory role this time. The sea, so dear to them, destroyed their community, their precious memories and their livelihood. The connection with the sea has changed. But despite the pain and sorrow, they were grateful to be alive, and especially they were grateful to the hill for saving their lives as illustrated by this YouTube recording:

... We lost everything, the unique thing that we did not lose was our lives and we are thankful to God for giving us the opportunity and the sufficient time for going up the hill, we thank God for having this firm hill, a hill that protects us, because without this hill we would have had to run away to other hills, and the sea would have found us on the way, we would have died...(Chile se levanta, 2010b).

Therefore, a new connection was generated with this natural resource. The hill was not a resource used by members in the pre-disaster period because it was a private space belonging to the Chilean Navy. This time, however, they were forced to use this space because of the emergency. They never expected that the hill would become their home for many years after the disaster. Consequently, natural resources played an important role in the emergency and it became even more important in the following stages of the emergency and reconstruction periods.

Natural resources are capacities that were not taken into account in my theoretical framework. These capacities are scarcely mentioned in other resilience frameworks either. Therefore, natural resources along with cultural capacities are the new resilience capacities emerging in the immediate emergency that contribute to extending my original resilience framework.

6.2.1. The crisis: surviving without food and water

The emotional impact of seeing the massive destruction caused by the tsunami was only the beginning of the crisis. The first days of the emergency were critical; the basic services were completely disrupted, people did not have food, drinking water, clothes, medicines, heat, electricity, and phone services. They were sleeping in precarious conditions, sleep outside in the cold, in blankets and makeshift tents. The situation became worse because no one knew that *Morrinos* had survived the tsunami impact; most people thought that all of them had died. At the top of the hill, they could see emergency vehicles transiting to communities located close to El Morro, but none of them stopped to see the situation of their community. El Morro was completely isolated (based on *interviews Mo-19, academic; Mo-7 and Mo-10, ordinary community members; Mo-1 and Mo-4, community leaders; field notes; and informal conversations*).

The formal leader of the Neighbourhood Council reported that they went to the municipality to ask for help but they found a horrific scene: the municipal building and all the centre of Talcahuano were destructed by the tsunami. By chance, he met the mayor who, unfortunately, was in poor condition: ‘This man [the mayor] was greatly affected, he told me: “Look at me, I do not know what to do, I do not have my people”...’ (*Interview Mo-1, community leader, my translation*). As I explained above, in the context of Talcahuano, municipal officers were also affected by the disaster, being unable to provide aid. Therefore, *Morrinos* had to accept the sad reality: they were alone and without any hope of receiving help. El Morro plunged into a state of anguish and uncertainty (*based on interviews Mo-19, academic; Mo-18, NGO practitioner; Mo-9, Mo-7 and Mo-8, ordinary community members; Mo-1 and Mo-3, community leaders; and informal conversations*)

Morrinos remained in this state for five days until they were found by Laura Bozzo, a Peruvian television presenter hosting the famous talk show called ‘Laura en América’. She was reporting the disaster in Talcahuano and went by chance to El Morro because the fishing boat ‘Don Renato’, stranded in the middle of the community, called her attention. When *Morrinos* realised that reporters were there, they immediately descended the hill. It was the first time that an external person went to El Morro after the disaster. *Morrinos* took this as an opportunity and used the television as a medium to ask for aid and let relatives know that they were alive (*based on interviews Mo-19, academic; Mo-6 ordinary community member; Mo-1, community leader; field notes; and informal conversations*).

To sum up, *Morrinos* were completely alone for five days; no authorities or relief workers went to visit them in this period because it was assumed, erroneously, that no one had survived. Therefore, they had to develop internal strategies for surviving in the emergency and activate their resilience capacities, as I explain in the following section.

6.2.2. Resilience capacities in the first five days of the emergency

In general, the resilience capacities that I identified in the pre-disaster period, especially social capacities, were also crucial for surviving the immediate emergency. As I explained before, economic and structural capacities were completely destroyed at this stage. Furthermore, similarly to the pre-disaster period, I did not find any planning and information and communication skills. These capacities were replaced by cultural capacities that were more relevant at this stage, namely, local knowledge which led to a new category of cultural capacities that I did not consider in my theoretical framework. Furthermore, natural resources were also crucial at this stage, especially the El Morro hill which was used in the evacuation process. Finally, as there was not external intervention, not many external factors were involved at this stage. The external factors that I observed were related to a city level and national level, including the mistaken tsunami alarm and looting.

As I have already explained the role of cultural capacities and natural resources in the previous sections, in the following section, I analyse the role of the social capacities which were extremely significant in the first five days of the emergency.

a) Cooperation

...I immediately told my people: ‘We have an emergency; we are all in shock, but we have to organise ourselves... (*Interview Mo-1, community leader, my translation*)

These were the first words of the president of the Neighbourhood Council once he realised that the arrival of external aid would take a long time. Therefore, organising the community was the first action undertaken by *Morrinos*. They were starving and they did not have food because the tsunami swept away all their provisions; they were desperate. Their first task was to search for food and drinking water.

Searching for food and drinking water

This task was organised by gender. Men were in charge of searching for food and drinking water, while women remained on the hill looking after their children. Men

of diverse ages went down to the community and dug through the rubble to find food as well as blankets, medicines or anything else that they could find. However, the situation was not very promising because the majority of people's possessions were bogged down in mud or scattered on the beach. They could rescue only some dishes, cutlery and a small amount of provisions that, evidently, were not enough for feeding the entire community (based on *interview Mo-1, community leader*).

Finding drinking water was a mission even more difficult. The water supply was cut off because the power plants were damaged and stopped working. *Morrinos* went to seafood companies located close to the community hoping to find water storage tanks (based on *interviews Mo-1, Mo-3, and Mo-4, community leaders*). However, these companies were completely destroyed by the tsunami. Luckily they found one company which had a tank in good conditions. The excitement of the man who found it is easy noticeable:

...I went alone because we did not have drinking water; other went to other places to look for natural wells or waterfalls in other hills but they did not find anything. But I went to another side, I was desperate for water and I looked at all seafood companies but the tanks were empty...Then, I remembered that when we were children and we played football, we had to cross the middle of a seafood company and there were some tanks. So, I decided to go there, I checked this company and the first tank had smelly water, the second one had oil and the last one had drinking water! I was so happy! Then a friend of mine came and I told him to inform people that there was drinking water and the people came with buckets to collect water. I was so happy, I had not taken a bath for many days and in the same place I took a bath... (*Interview Mo-4, community leader, my translation*)

Morrinos were desperate for food and although only a few people mentioned it or recognised it during my fieldwork, some people went to shops to loot basic items such as milk for children, flour, sugar, rice, pasta and other essential goods including diapers and medicines (based on *field notes and informal conversations*). Furthermore, men went to fishing companies located close to the community to take canned fish and seafood. All the food collected was given for community use; women quickly organised the food items and installed a very basic community kitchen with the few pots and dishes found on the shore.

Community kitchens and emergent leaders

Community kitchens are probably the emblem of the cooperation in El Morro during the emergency period. They were not only crucial for the survival of the community in the first days of the emergency but also united *Morrinos* amidst pain and suffering. The community kitchen became an intimate space for sharing their experiences and deep hurt and comfort one another.

The food collected by men from debris and looting was given to a group of women who were responsible for cooking and serving people. These women belonged mainly to 'Palomitas Blancas' group who spontaneously assumed this role. However, the food was not sufficient to properly feed the entire community, so they had to prioritise and allocate the scarce resources according to general criteria; they distributed the food by family, giving special attention to the elderly, pregnant women and children. Thinking of the worst scenario in which the external aid would take a long time, they had to separate the food items and reduce the daily intake at a minimum level. The situation was so critical that they even had to survive with one spoon of rice per day. This generated the first conflicts in the community because some people did not accept such extreme criteria regarding the distribution (*based on Interview Mo-4, community leader*).

The group of women in charge of the community kitchen had to be strong enough to face these conflicts. Among these women, Cecilia Vallejos, the informal treasurer of 'Palomitas Blancas,' was the person who naturally emerged as a leader in the community kitchen. She had to assume an authoritarian leadership in order to deal with discontented people. Apart from organising the system in the community kitchen, she had to restore the order in the community after the devastating tsunami. The formal leader of the Neighbourhood Council, Don Alonso, proved unable to control the crisis; he was not very quick in reacting in the emergency and, at that moment, the community needed someone strong and proactive, someone who could control people and make quick decisions. Cecilia had the ability to calm people down and give them hope during that difficult time. She was emotionally involved with people and her strength, self-confidence and positive attitude gave *Morrinos* a

sense that everything was under control (*Based on Interviews Mo-19, academic, and Mo-11, municipal officer*).

Therefore, women assumed the primary role in the organisation of community kitchens, while men were displaced to a secondary one. Nevertheless, men continued to search for food and water during the five first days of the emergency. Thus, the traditional role of men as providers and women as the group doing domestic chores continued. However, on this occasion, for the first time women assumed an important role at the community level. Even more, it was the first time that a woman was positioned as a leader in the community. This is the beginning of the slow process of women's empowerment in the community.

Security guards

Organising the security inside the community was another necessary action undertaken by *Morrinos* in the face of the emergency. The country was in chaos as I mentioned in the previous chapter, and people felt threatened by looting and vandalism. In this uncertainty and fear, *Morrinos* had to take quick actions to protect their community and their scarce supplies. Men were responsible for the safety of the community and assumed their role as protectors. They organised groups of men of different ages who had to play the role of security guards. They applied a 24-hour shift system in order to protect the community all the time. These guards were armed with improvised weapons, mostly sticks and knives (based on *interview Mo-3, community leader*). They were located in strategic points of the community in order to control all possible entrances to the hill, as one of the community members explained:

... We organised ourselves by groups, there was one group down, and others were located in the corner and at the main entrance of the hill. Every time we saw an outsider we had to ask them: 'What are you doing here? Where are you going? Which family are you going to visit?' All men had to do this job, old and young... We had to work varied shifts... We could not sleep, even if we did not have to work, we woke up many times at night with our flashlights,

we were afraid that someone could come... (*Interview Mo-6, ordinary community member, my translation*).

The same system of controlling outsiders observed in the pre-disaster period was also observed in the immediate emergency. This time, however, due to the circumstances, they had to adopt a formal security system and very strict security measures. In practice, the strategies were similar; they stopped strangers and interrogated them before allowing their entrance into the community. The use of improvised weapons was another similarity. Although, in the immediate emergency, ‘they took it to the extreme’ (*Interview Mo-6, ordinary community member, my translation*) because they even attached knives to one end of the sticks. But for others, this action was justified, because they believed that ‘nothing is extreme when it comes to defending your family’ (based on *interviews Mo-8, ordinary community member; Mo-3, community leader; field notes; and informal conversations*).

Fortunately, as it occurred in other cities, no mobs attacked the community. Therefore, the defensive actions taken by people were the result of the collective hysteria emerged in the chaos rather than a real risk. Yet, the security guards in El Morro played an important role in the maintenance of peace and security inside the community.

b) Sense of Community

Community kitchens and security guards reflected not only the great level of cooperation but also the sense of community. Every action carried out by the *Morrinos* was imbued with solidarity and union which was important in keeping the calm and peace in the middle of the catastrophe.

The food scarcity was depressing. However, this was not an impediment to showing solidarity with others. They shared whatever food they had. As one interviewee said ‘...even if we had just a few things, we shared them, sugar, coffee, rice...’ (*Interview Mo-6, ordinary community member, my translation*). They did not have so many material goods to share but they still had non-material goods; they had the friendship of their neighbours, the spirit of community and trust. This last aspect was important

because the disaster had a tremendous psychological impact on *Morrinos* and they did not receive mental health support for many days. Therefore, the only support was themselves, their own neighbours. As one interviewee said, ‘we listened to each other and we cried together’ (*Interview Mo-7, ordinary community member, my translation*). The strongest *Morrinos* became informal therapists for those who were more affected.

They tried to relieve their pain by sharing their feelings with others. They suffered the same problems; therefore, they were more attuned to the needs of others. This generated a more powerful sense of community; ‘we are not alone, we are together’ were the words they continuously used to encourage one another (*various interviews*). The most memorable moment was when a group of residents decided to sing the community anthem in front of the television cameras for the ‘Laura in America’ talk show. The recording shows that they sang the anthem passionately, loudly and proudly. They wanted to demonstrate their strength in the middle of difficulties. The sense of community reached the maximum level of expression in the first days of the emergency.¹⁶

c) Social capital

Similarly to the pre-disaster period, bonding social capital was predominant in the first days of the emergency. The distribution of the families at the top of the hill was one indicator of it. Spontaneously, makeshift tents and blankets were put next to the nearest relatives and friends. This was useful for protecting each other during the days in which there was the risk of mobs and looting in the community. For example, women who were alone during the night while their husbands were working as security guards found protection in their relatives and friends who were close to them. These primary networks were strengthened even more because they had to spend all day together; during the day, they ate together and at night they gathered around bonfires when they could not sleep.

¹⁶ *Morrinos* singing the community’s anthem in the first days of the emergency can be watched at the end of this video: https://www.youtube.com/watch?v=dY548wWxvRk&list=PLiiGfJ7fx-ZYb_NUbcSCSIcpXyIxhyw5&index=20

Social capital was also widespread beyond the community boundaries because relatives and friends from other communities and cities that were not affected by the tsunami went to El Morro to provide staple food and other basic supplies. The following quotation is an example of the external help received by an outsider but also shows the sense of sharing and generosity among neighbours.

...My son was dating a girl from Chillán [a city from the Bío-Bío region] and she and her parents immediately brought milk for children and babies and we shared it with all community because there were many children at that time and mothers did not have milk to feed them...(Interview Mo-6, ordinary community member, my translation)

The connexion with linking social capital was limited because the local government was not able to provide aid. The only external bond created during the first stage of the emergency was with the television presenter Laura Bozzo, who through several interviews gained the trust of *Morrinos*. They shared their personal stories, experiences and feelings with her. They were grateful that she was the only person who went to El Morro after the disaster because even national reporters did not come (based on interview Mo-19, academic; informal conversations; and YouTube videos).¹⁷

d) Trust

Trust, in the immediate emergency, showed different nuances. Trust among neighbours increased in most of the families because they could get to know each other better having to spend all their time together. An intimate and solidary environment was created and lasted during all this period. *Morrinos* were emotionally involved; they had to expose their vulnerabilities and fears to others to find comfort. Furthermore, the trust in their leaders, both formal and emergent leaders, was also essential for keeping this atmosphere of calm, companion and friendship.

¹⁷ The interviews that Laura Bozzo carried out in El Morro can be found on YouTube. Further information is available in the bibliography, under the author 'Chile se Levanta'.

However, some ethical issues regarding looting emerged during this period. Some people did not accept it and considered it to be ‘theft’, while others perceived it as a survival strategy. This caused conflicts among neighbours which negatively affected the internal trust of the community. Ethical dilemmas would slowly emerge in the community; personal and community values would collide more frequently in several situations during the emergency and reconstruction period which revealed the *dark side* of resilience.

Finally, there was a negative impact on the trust in external networks. The absence of emergency institutions and the lack of aid in the first days of the emergency increased the anger, distrust, and hostility towards government. Trust in governmental institutions was broken even more after the mistaken tsunami alarm. Furthermore, the trust in other communities and outsiders was also negatively impacted by the widespread fear of looting, vandalism and mobs. Consequently, the closed boundaries of El Morro were exacerbated in this period which increased the strict social control of strangers as illustrated by the ‘security guards’ strategy.

e) Participation

The final social capacity was participation which was inclusive in the immediate emergency; old, young, women and men were integrated into several tasks required in the emergency. They had only one purpose: ‘to survive’. The focused effort and commitment of *Morrinos* were the factors that characterised the participation in the first stage of the emergency. Leaders, formal and informal, were crucial to promote these aspects.

However, there were some changes in the traditional participation pattern. The Neighbourhood Council went from being a passive organisation in the pre-disaster period to an active organisation for the community. The formal leader had to organise the community and the roles required in the emergency. The emergent leader, Cecilia Vallejos, joined this organisation and helped Don Alonso in the reestablishment of calm and security in the community. Similarly, ‘Palomitas

Blancas' assumed an active role during the immediate emergency and continued contributing in the winter emergency period as I show in the next chapter.

Conclusions

The objective of this chapter was to analyse the first stage of the disaster called immediate emergency. This chapter presented the first findings to answer my research question. The impact of the 2010 Chile earthquake and tsunami on community resilience was characterised by destruction, stress and chaos but also by the absence of external help. Nevertheless, in the midst of the chaos, resilience capacities emerged. The latent resilience of El Morro manifested its full potential.

The main resilience capacities observed in this period were social and cultural. The disaster completely destroyed the economic and physical resources of the community, including local infrastructure, basic services, income and employment. Therefore, these capacities were undermined in this period and a state of *decay* of those capacities took place. Consequently, *Morrinos* had to rely on social capacities, including participation, leadership, cooperation, social capital, trust, sense of community and place attachment. These capacities, with the exception of trust, were strengthened after the disaster and, therefore, a state of *growth* was manifested. The disaster impacted positively on social capacities and their activation was crucial for the survival of the entire community. As I mentioned in Chapter 2, these resources are often overlooked in disaster planning as the attention is mostly focussed on physical or tangible capacities. Communities play a crucial role in dealing with disasters and El Morro is one example of this.

The impact of the 2010 disaster in El Morro also revealed the inherent nature of community resilience. The disaster activated new resilience capacities that I did not initially consider in my theoretical framework: natural resources such as El Morro hill and cultural capacities, including local knowledge, beliefs and language were activated. Furthermore, I observed that some capacities acted as a *catalyst* for other resilience capacities. Social capacities, including local knowledge and sense of

community, were crucial in activating others, such as cooperation, social capital and participation. I observed the same pattern in the following stages of the disaster. The observation that some capacities can act as a *catalyst* unveiled the dynamic nature of resilience. This provides more insights into the main interactions that take place inside the communities after the impact of natural disasters.

The 2010 disaster also brought relevant changes in some capacities compared to the pre-disaster period. This is the principle of *variability* that I stated in the introduction of this chapter. The most important changes were observed in leadership, trust and participation. Firstly, leadership experienced one of the major changes. For the first time in the history of the community, a woman assumed the leadership of El Morro. Cecilia's leadership was contested and opens the debate about gender issues and power relations in communities as I show in the following chapters. Secondly, trust towards government and among neighbours was negatively affected. Two external factors, looting and the mistaken tsunami alarm, were the main hindering factors that impacted trust. Thirdly, the participation pattern also changed, the Neighbourhood Council, which previously had a passive role in the community, assumed an active role during the immediate emergency. These capacities would continue changing in the next periods, showing the changeable nature of resilience over time. But they are not the only ones; other resilience capacities would also undergo major changes. Although both looting and the mistaken tsunami alarm were the only external factors observed in this period, in the next periods a different pattern would develop with more external factors radically altering the dynamic of the community. Furthermore, what I identified as the *dark side* of resilience would also emerge.

In the next chapter, I present the next stage of the disaster, the winter emergency period. Similarly to the immediate emergency, I analyse the resilience capacities that contributed to coping with this period, along with the external factors that affected these capacities.

CHAPTER 7

THE WINTER EMERGENCY: OPENING UP COMMUNITY BOUNDARIES

Introduction

The immediate emergency period was characterised by the absence of external intervention and the activation of internal resilience capacities to cope with the event. Nevertheless, this situation completely changed in the winter emergency. El Morro was literally ‘invaded’ by external agents who significantly affected the internal dynamic of the community. From this moment onwards, El Morro would cease to be a closed community; it would open its boundaries in order to receive aid. Therefore, following my theoretical model of community resilience, external factors would play a crucial role at this stage because they would affect resilience capacities in different ways.

As external factors are particularly relevant for the winter emergency, I structure this chapter in relation to them. In the first section, I contextualise the emergency period when the first external factor emerges, namely, the splitting of the community into two areas. In the following sections, I present three specific factors, including external aid, lack of coordination amongst institutions and permanent support from local government. At the end of this chapter, I analyse the resilience capacities and how the external factors impacted them. It is clear that some capacities experienced major changes compared to the pre-disaster and immediate emergency periods. These changes reflect not only the variability of resilience, as I mentioned in the previous chapter, but also the positive and the dark sides of community resilience.

7.1. The context of the winter emergency: Living in tents (March-June 2010)

After the five days of the immediate emergency, people still remained at the top of the hill living in improvised tents. The summer season was ending and cold days were approaching. The consequences of the tsunami were beyond the destruction of physical infrastructure. The lack of food and water were not the only problems in the emergency; serious problems would soon emerge showing the worst face of natural disasters.

After having lived in improvised tents for fifteen days, *Morrinos* received watertight and wind-resistant tents donated by the Russian government which slightly improved the living conditions in the emergency camp (see figure 7.1) At the same time, the local government installed portable toilets and showers, and allocated one municipal officer to work in the community (Moussard, 2011, p.63). Although the winter emergency period, according to the National Reconstruction Plan, included the construction of temporary housing, in El Morro the situation was different and the families had to wait until the end of June, this means at the beginning of the reconstruction period, for their temporary housing. Therefore, they had to live for four months in emergency tents. This delay in building the temporary housing increased the distrust towards the government.

Living in emergency tents in deplorable conditions for about four months was not easy for *Morrinos*. The family dynamic was negatively affected by the precarious conditions of the emergency camp (based on *interview Mo-10, ordinary community member*). The Russian tents were very small and they were not enough to shelter the large families of El Morro. For example, two or three families that used to have their own houses had to share the same tent, and in some cases even more than ten people were living in the same tent (*Muni Talcahuano, 2010f, YouTube video; and field notes*). ‘It is really bad here; we are overcrowded; we cannot live in this tent’ were the main complaints of *Morrinos* (based on *interview Mo-19, academic; Mo-11, municipal officer; field notes; and informal conversations*).



Figure 7.1. Emergency tents in El Morro (Source: Talcahuano City Council, 2010)

The lack of personal privacy in the tents impacted the mental health of *Morrinos*, causing depression, stress, anxiety and other psychological disorders. The situation got even worse when students had to return to schools and universities. One of the interviewees remembers how the poor living conditions affected the studies of their children:

... We were living in a tent when the school season started, two of my children were studying at the university at that time and I saw them, I remember... [deep sigh] I saw them studying with a flashlight inside the tent because we did not have light, anything [crying] ... I always remember my children studying in these conditions, they were in their final year and they were in exam period, my heart ached to see them studying with flashlight ... (Interview Mo-3, community leader, my translation)¹⁸

Furthermore, on the El Morro hill, there was not enough space for all families, which caused a serious overcrowding problem. For this reason, the local government decided to move 80 of the 170 families to the El Morro Stadium, while the other families remained on the hill (Based on Muni Talcahuano, 2010f, YouTube video;

¹⁸ The interviewee was particularly touched by this story because it was the first time, after four years, when he could share this experience with someone else.

interview Mo-2, community leader; and field notes). Consequently, El Morro was split into two sectors, which deeply influenced the resilience capacities of the community, especially the place attachment and social capital. Unfortunately, this attempt to reduce community overcrowding was not enough to upgrade the living conditions of *Morrinos*. Splitting the community into two is the first external factor found at this stage. Other external factors will emerge later on.

However, living in tents was only one aspect of the problem; health and economic issues became also more palpable in this period. In the health area, the tsunami led to outbreaks of infectious diseases in El Morro. The debris left by the tsunami and the absence of sanitation systems in the overcrowded camp resulted in the proliferation of mosquitoes and flies in El Morro (based on *interview Mo-19, academic; and Mo-10, ordinary community member*). Furthermore, it also generated odour problems, and people could not bear the nauseous smell of the decomposed fish remains. As one of the municipal officers recalls, ‘everything smelled fishy; there was a rancid odour here’ (*Interview Mo-44, municipal officer, my translation*). Additionally, there was an increase in stray dogs in the community with the consequent risk of developing rabies¹⁹. A researcher from a local university recalls the degradation of the sanitary conditions in El Morro:

...I asked myself how they can live there, it was full of flies, it was horrible, all the rubbish left by the sea, everything smelt so badly and even after a month, it still smelt badly, when I talked with people they had so many flies around them, the flies were stuck on the face of children, they were full of flies. Once, I was walking and, suddenly, a lot of flies appeared, it was so disgusting, it was like a tornado of flies. All people were ill; they had stomach ache because of the contamination... (*Interview Mo-19, academic, my translation*)

The situation was out of control; hospitals and community health centres were destroyed or severely damaged by the tsunami, and therefore, they could not provide medical assistance to people. The situation got even worse when in May it started

¹⁹ These stray dogs survived the tsunami impact; some of them got lost, while others were abandoned by the owners who had to move to other cities or communities after losing their houses. This issue became one of the most difficult public health problems during the winter emergency period in Talcahuano region.

raining and low temperatures brought new illnesses; cold and flu affected largely children and elderly people in El Morro. The disaster did not only bring physical diseases but also psychological ones. The emotional damage left by the tsunami is one of the critical aspects during the emergency and reconstruction periods in which the lack of proper psychological support would impact negatively the lives of *Morrinos*. The continuous aftershocks caused panic among *Morrinos*, making them remember the tragic night of the disaster. As one interviewee states:

People were terrified, people cried because of the constant aftershocks, they thought that a new tsunami could come, the television was showing constant tsunami alerts... all people were so scared, people screamed and ran in the streets. (*Interview Mo-19, academic, my translation*)

Regarding the economic sphere, the situation was not very promising. As the weeks passed, the economic impact became more visible in El Morro: fishermen were not able to return to the sea because they had lost their boats and tools (based on *interviews Mo-6, ordinary community member; Mo-3, community leader; and Mo-11, municipal officer*). This situation led to feelings of frustration and uncertainty in the families. The heads of the families did not find it easy to accept that they lost their jobs and that they were unable to sustain their families. The desperate feelings of one of the fishermen can be observed in the following quotation from a YouTube video:

We need to work for living; we cannot stay here without doing anything, my children are studying and I do not have money, I cannot give them money for buying school supplies and for bus tickets...(Muni Talcahuano, 2010e, YouTube video, my translation)

Political authorities indicated that the repair of boats was going to take at least two years (*Muni Talcahuano, 2010e, YouTube video*), increasing the anger and frustration among *Morrinos*. The unemployment problem became an opportunity for some *Morrinos* but a drawback for others as I notice in the next chapter. This triggered tension and some resilience capacities were negatively affected.

In summary, during the four months of the winter emergency, El Morro was immersed in a profound crisis that reached levels that surpassed the initial fears of

Morrinos. The emergency had exceeded the internal capacity of *Morrinos* to cope with the disaster; external aid was urgently needed. This *external aid* became one of the most relevant external factors in the winter emergency, as I discuss in the next section.

7.2. External aid: ‘The miracle’

Morrinos had never expected that the external aid would soon reach the community in ways that they considered to be ‘a miracle’. ‘We are lucky...God protects us...we are thankful’ (*based on field notes and informal conversations*) are the common reactions of *Morrinos* when they recall the unexpected help received after the five days of the emergency. Due to the broadcasting of the ‘Laura en America’ talk show *El Morro* became popular not only in the country but also internationally. Government institutions, city councils, NGOs, international organisations, companies, religious organisations, schools and even people without affiliation rapidly provided large amounts of aid to *El Morro*. The critical situation of food scarcity finally ended. Additionally, famous actors, tennis players, football players, politicians, several national and international mass media invaded *El Morro* in a couple of days. As a result, *El Morro* was no longer an anonymous community but the most well-known community affected by the Chilean disaster.

Consequently, *El Morro* had to open its closed boundaries to receive this help. The excessive help and intrusion of new actors inside of the community brought, however, profound changes in the internal dynamic of the community. *El Morro* would never be the same; the so-called ‘miracle’ became a turning point in the history of *El Morro*.

7.2.1. External help: Two sides of the same coin

The massive amount of food, clothing, medicine, bedding, toiletries, among other items, arrived quickly. *Morrinos*, even in the best scenario, never expected to receive this amount of assistance. They were joyful and thankful. The nightmare of scarcity came to the end.

...We received a lot of help, the City Council, the Regional Government, business owners, universities, students, the Red Cross [NGO], police, Hogar de Cristo [NGO], health centres, politicians and foreigners came to help us...we cannot be ungrateful, we cannot complain, we were blessed, we are very thankful for all the aid received...(Interview Mo-3, community leader, my translation).

Nevertheless, the aid received exceeded the community's capacity to properly manage the large amount of given supplies (based on interviews Mo-19, academic; Mo-11, municipal officer; Mo-52, Mo-17 and Mo-17, NGO practitioners). El Morro collapsed. 'It was too much' and 'they exaggerated' are the common expressions of *Morrinos* when they recall the support they received (based on interviews Mo-8 and Mo-9, ordinary community members). The excessive external help became a new nightmare for *Morrinos* that significantly affected the resilience capacities of the community. The union, cooperation, trust and sense of community was reverted to a situation in which individualism, selfishness and distrust appeared for the first time in the community. From now on, El Morro would show a different face.

'Many bad things came up', 'people changed', 'everything changed', 'the community was not the same anymore' are the common complaints of *Morrinos* when they refer to this 'black period' (based on field notes and informal conversations). Selfishness and individualism were expressed in several ways; union and solidarity were no longer there:

...Everything changed, we saw the dark side of people, when some aid arrived at the community, people immediately went to take goods for them, they waited for help at the main entrance of the community because they wanted to be the first ones to receive the aid, and they said 'This is only for me', 'for me and my family'. They did not share it, the majority of people behaved in that way, with the exception of only a few people (Interview Mo-6, ordinary community member, my translation)

Unexpectedly, egoism arose in the ideas and behaviours of *Morrinos*. Progressively, the sense of community was replaced by a sense of individualism, which brought the first conflicts to the community. The emergence of these conflicts broke the strong internal bonds existing in the community and left deep marks in the social dynamic of El Morro. A community leader remembered:

...People started fighting, they fought a lot...even close families started fighting... now they cannot look each other. Before it was different, if there was a problem, all people went to help but afterwards, the situation was different, only a few people helped. Everything changed completely...
(*Interview Mo-1, community leader, my translation*)

Individualism also unveiled a new nuance: greediness. *Morrinos* tried to ensure their own survival by getting as many resources as they could. The common perception of the interviewees was that 'people wanted to get all the benefits just for them'. Even people without necessities who had enough economic resources or did not lose their jobs, were asking for help many times (based on *interviews Mo-4, community leader; Mo-8 and Mo-9, ordinary community members*). This situation led to negative emotions among *Morrinos* who became angry and disappointed. In their own words, 'there was no consciousness, people were shameless' (*Interview Mo-4, community leader, my translation*). This 'shamelessness', as they call it, led to actions that many considered to be 'despicable' such as throwing clothes away. The abundance of resources, especially clothing, that arrived without any control created this incomprehensible behaviour (based on *interviews Mo-1 and Mo-3, community leaders; Mo-11, municipal officer; Mo19, academic; informal conversations*). A community leader said:

...There were so many clothes that people wore clothes one day and then, the next day, they threw them away because they did not want to wash them, we could see all the clothes in the bin, all the help received...people took advantage of the situation (*Interview Mo-1, community leader, my translation*).

Throwing away clothing was a critical action that showed not only the *dark side* of the community but also the decline of intrinsic values. As interviews said, 'People lost their principles...all inner demons came up' (based on *interview Mo-2, community leader; and field notes*). Furthermore, some *Morrinos* even stole from their own neighbours as the following interviewee reported:

...Our own neighbours entered our house to steal; they were found inside the house... someone stole my son's clothes and I saw her showing these clothes the next day and I told her: 'Hey, you! These are my son's clothes!' This kind of things happened. The second floor of my house was not affected so people came here to steal. For this reason, I decided to come to my house every night

to sleep here and protect the few things we rescued. Even, it was a risk because at night there were many temblors but I had to relax and I said to myself: ‘this will stop, be quiet and I stayed there’... (*Interview Mo-3, community leader, my translation*)

Therefore, the perception of internal security proudly reported by *Morrinos* in the pre-disaster period suddenly disappeared. Distrusting people became normal among *Morrinos*. This worsened when the items collected during the lootings in the first days of the emergency started disappearing from the community. This is a very sensitive issue that was not easy to approach during my fieldwork. Some interviewees mentioned that some neighbours profited from the chaos reigning in El Morro at that time and stole these items with the objective of selling them in other communities:

... We carried out the stuff we got [in the looting], drinks, and canned fish in boxes to the hill, we were 180 families and each family got some food but there was so much left, What happened to this food? Overnight everything disappeared. Some people sold it...there were four or five people involved in this theft; they took the role of distributing the food in order to make a profit... (*Interview Mo4, community leader, my translation*)

The observation of *Morrinos*' behaviour in the winter emergency period leads me to new questions. How could such a drastic change in the community be possible? What happened to the sense of community, solidarity, the sense of a ‘big family’ that reigned in El Morro in the pre-disaster period? What happened to community values? At a first glance, from the perspective of *Morrinos*, it seems that the answers to these questions lie in the understanding of ‘human nature’. The ‘dark side’ or ‘the inner demons’, as they referred to this situation, could be the normal behaviour of people facing a crisis; the survival instincts bring an ‘every man for himself’ mentality. However, this situation should be more common in the immediate emergency, when the resources are scarce, but this was not the case of El Morro. During the first days of the emergency, altruism prevailed as a common value. Therefore, other reasons explain the drastic shift in the community after the immediate emergency. I found two factors that provide some glimpse of the abrupt change in El Morro: the distribution of resources and lack of coordination amongst institutions. These are part of the external factors identified in the winter emergency

that contributed to developing my integrated model of community resilience. I present these two factors in the next section.

7.2.2. Distribution of resources: Equity or equality?

The distribution of resources is the first factor that could explain the changes in El Morro. The community leaders were in charge of receiving and allocating the humanitarian aid. These roles were assumed spontaneously and were respected by the community. However, the volume of assistance received outstripped the capacity of leaders to deal with the donated items. In their opinion, ‘we were overwhelmed’ (*Interview Mo-1, community leader, my translation*), ‘the situation got out of control’ (*Interview Mo-2, community leader, my translation*). Having noticed this situation, some *Morrinos* voluntarily decided to help leaders manage the donations. This was a group of no more than ten people, mostly women close to Cecilia Vallejos, members of the ‘Palomitas Blancas’ organisation that were acknowledged by the community as ‘Las colaboradoras’ [volunteers, my translation]. For formal leaders, the incorporation of ‘Las colaboradoras’ was ‘useful and significant’ (*Interview Mo-1, community leader, my translation*) and ‘without them, it would have been impossible to assign all resources’ (*Interview Mo-2, community leader, my translation*).

Undoubtedly, having a specific group of people in charge of the distribution of aid was a necessary condition for carrying out this difficult task but it was not sufficient. Establishing reasonable criteria for an equitable distribution of resources was also necessary. How can we allocate resources fairly? This became the main dilemma for community leaders. The way in which they solved this dilemma could be considered a critical factor in the winter emergency period. Community leaders were judged and their connection with the community became strained.

Attaining fair distribution of resources was not an easy task mainly because the quality and quantity of the received resources varied widely. Nevertheless, *quantity* was the main point of conflict. Donations did not come for all families; as one resident stated: ‘we received for example 50 milk packs, 80 towels, and some sugar

packs but we had more than 150 families in El Morro, so we did not know how to distribute them' (*Interview Mo-9, ordinary community member, my translation*). Community leaders could not reject the aid which was not enough for all families because the community was in precarious conditions and urgently needed external support. As *Morrinos* said, put it 'any help was welcome' (*Interview Mo-2, community leader, my translation*), 'we could not say no, we received everything' (*Interview Mo-1, community leader, my translation*). They accepted any kind of solidarity act, from small quantities of food to massive quantities of clothing donated by large department stores. As a result, they were burdened with multiple types of resources that needed to be allocated quickly.

Community leaders did not have previous experience in distributing humanitarian aid at such scale. Therefore, finding equitable distribution criteria was a big challenge. They were forced to find those criteria urgently because the massive donations were piling and people were demanding the items. Despite the inexperience of leaders, two main criteria were suggested: the number of family members and the level of a family's vulnerability. Specifically, they had to face two difficult questions. In the first criterion, the main question was, Should the resource allocation consider the size of the family? In the second one, the question that arose was, Should the resources allocation consider the specific needs of the family?

The first criterion was adopted from the beginning. However, the particular socio-demographic characteristics of El Morro made the decision process more difficult. The number of members in each household varied extensively because as I explained before, extended families were common in El Morro in the pre-disaster period, with three or more families living together in one house. Considering this fact, leaders reached the logical conclusion that they would not give the same amount of food and other items to the people, and that the aid would be given according to the size of the family. The distribution system is explained in the following quotation from one of the members of 'Las colaboradoras'.

...The donations that we received were put into a storage room and then, we distributed them [donations] according to the family members living in a tent,

because in a tent, for example, there were three families with fifteen members in total, while in another tent, there was only one family with three members. So, we could not give them the same amount of food because there were fewer people, so we had to reduce the amount of food given to them... (*Interview Mo-9, ordinary community member, my translation*)

However, this apparently fair and logical system of allocating resources was not liked by all people. Some families with fewer members complained and demanded the same amount of resources as the families with more members. They disagreed with the criterion proposed by leaders considering it to be 'unfair'. The leaders and 'Las colaboradoras' tried to make people understand the system, but it was impossible for some of them. As they put it, 'people did not listen to us' (*Interview Mo-2, community leader, my translation*). Some *Morrinos* even reacted aggressively.

If the adoption of the first criterion was difficult, the application of the second one was even more problematic because it was not related only to the number of resources but also to variability. The diversity of people in El Morro made the leaders' work even harder. People of different ages with diverse needs and a level of vulnerability, required particular aid:

...There were families with children who needed more milk; there were families with babies who needed diapers; there were people with illness who required medicines; old people who needed more blankets because it was very cold, so it was so difficult... (*Interview Mo-2, community leader, my translation*)

Therefore, families had diverse needs and how to meet them became a new challenge for community leaders. They tried to consider the specific needs of each family when allocating resources; however, this annoyed some *Morrinos* who did not understand the system. They advocated for equality, namely, they wanted to receive the same items without distinction.

Morrinos were discontent and the community was divided into two groups; the 'supporters' and the 'dissidents' of the leaders' criteria. This situation also generated tension inside of the group of 'Las colaboradoras'; some of them left their position because they could not resist the pressure from the 'dissidents' or simply because

they disagreed with the criteria established by leaders (based on *interview Mo-9, ordinary community member; and field notes*).

Leaders were facing a difficult scenario. The main question they faced was: How could we please everyone? However, they realised that it was impossible. As one leader remembered: ‘There was no way to make all people happy’ (*Interview Mo-1, community leader, my translation*). Aware that any criterion adopted would cause conflicts and disagreements. They decided to continue applying the distribution criteria that they considered to be ‘just’: allocating resources according to the size of families and their specific needs. As expected, this resulted in anger, resentment and frustration in the dissident group, feelings that still prevail in the community today.

The distribution of resources became the first ethical issue to emerge in the winter emergency period. The sense of justice was the critical point. The criteria applied by leaders when allocating resources was ‘just’ for some, but ‘unjust’ for others (based on *interviews Mo-19, academic; Mo-11, municipal officer; Mo-17, NGO practitioner; Mo-1 and Mo-2, community leaders*). For some, just distribution meant equality; they wanted the ‘same items in equal amount by family’, while for others the principle of equity should have guided the distribution of resources- ‘with diverse items, being given in different amounts depending on the size and needs of the family’. Therefore, disagreement about equity and equality divided the community. Leaders tried to follow an equity criterion; however, this was not supported by the dissident group who endorsed a system of distribution based on equality.

The distribution of resources could be considered a *hindering factor*. Nevertheless, the support from local government would contribute to organising the external aid as explained later in this section.

7.2.3. Lack of coordination amongst institutions

The organisational chaos caused by the lack of coordination amongst institutions was another hindering factor associated with external aid that could also explain the changes which occurred in El Morro. Leaders had to deal not only with the massive amount of resources but also with the arrival of several NGOs which wanted to contribute to the emergency process. NGOs arrived not only with emergency supplies but also with specific services and social programmes that required a permanent and active presence of NGOs workers in the community. It was impossible for leaders to coordinate both the resource allocation and their work with NGOs. Therefore, they were put into a situation where they had to prioritise. For community leaders, what was 'urgent' was the satisfaction of the basic needs of their community; they knew that food, clothing, shelter and health care were desperately requested by *Morritos*. Thus, the distribution of resources was the primary task for leaders. As a result, the interaction with NGOs was limited only to the reception of resources donated by them. The implementation of programmes was directly led by NGOs.

The programmes implemented by NGOs varied depending on their area of intervention. For example, 'Hogar de Cristo' ('Home of Christ', a Chilean NGO) focused on helping children and elderly people, while 'World Vision' (international NGO) centred their work only on children. Unfortunately, these organisations did not coordinate each other and carried out their programmes individually. This situation generated two main problems. The first one was that some social groups were left aside, specifically women and young people. The second one was that some groups were over-provided, especially children. More simply, NGOs repeated the same work with the same groups of people several times, wasting efforts that could have been directed to other activities or tasks that the community needed (based on *interviews Mo-19, academic; and Mo-11, municipal officer*).

The lack of coordination among NGOs got even worse when other institutions such as schools, universities and churches arrived in El Morro. These institutions did not intend to undertake permanent work in the community but visited the community

occasionally in order to assist people with specific services, including recreational activities for children, sanitation services and health assessments (Based on *Muni Talcahuano, 2010c, Muni Talcahuano, 2010a, Youtube videos; Interviews Mo-8, ordinary community member; Mo-17, NGO practitioner; and informal conversations*). The intrusion of more institutions added more confusion to the already chaotic situation. In addition to the similar activities delivered by NGOs, the presence of even more institutions meant that on the same day, more than three of four activities were carried out at the same time, impacting the community in several ways. The local government was not present at the beginning of the winter emergency (March-April 2010) and could not contribute to coordinating the efforts of the several institutions in El Morro. Nevertheless, this situation changed because in May 2010 a social worker was appointed to work in El Morro contributing to organising the external aid and the intervention of external institutions as I show later in this chapter.

From a positive perspective, the company, attention and care given by several institutions were favourably received by *Morrinos*. As they put it, ‘we did not feel alone anymore’ (based on *interviews Mo-7 and Mo-10, ordinary community members; Mo-1 and Mo-3, community leaders; field notes and informal conversations*). Recreational activities were especially valued by *Morrinos* because they helped them relieve the pain and sorrow. In their own words, ‘it was so much suffering...they brought us happiness’. However, from a negative point of view, the intervention was excessive and caused more damage than relief in some cases. One example was psychological interventions. Psychology and psychiatry students from several universities, and national and international therapists from private and public health institutions carried out several interventions to help reduce post-traumatic stress disorder. At the beginning, people appreciated these interventions because they helped them release the emotional tensions that had been repressed for a long period. The following quotation reveals the positive effects of one of the psychological interventions applied, from the perspective of an ordinary community member:

...They helped us relax, they gave us a head massage, we were completely relaxed, and then we had to stand up and hold a stick and hit everything we encountered on our way, trees, shrub, everything, we had to hit very hard in order to take off all that we had inside, our anger, pain, sadness.... Every time I hit, I cried and this was very good for me because I threw away all that was inside me... (*Interview Mo-10, ordinary community member, my translation*)

Yet, most of the institutions applied brief interventions and in many cases only psychological evaluations were made, without any intervention. All these institutions were not coordinated each other; they arrived many times during the day and they did not follow any strategy for collaborative work. This situation caused so much damage in some of the people who had to repeat their tragic stories over and over again. As one interviewee stated, ‘...I was bored, they asked me the same thing so many times...’ (*Interview Mo-7, ordinary community member, my translation*). Unfortunately, no one could control the massive irruption of psychological interventions in the community. On the one hand, community leaders did not have the competency to measure the danger of the massive and repetitive psychological assessments. On the other hand, there was not support from community health centres because they were completely destroyed by the tsunami and practitioners were assigned to other emergency tasks throughout the city. Therefore, psychological interventions were left in a 'no-man's land'.

Another example of lack of coordination was the excessive community assessments (community diagnoses) applied in El Morro by several institutions with the intention of identifying the specific needs of the families during the emergency period²⁰. Depending on the purpose of the institutions, different assessments were applied; some of them were focused on specific groups of people such as women, children or elderly, while others were focused on specific areas affected by the disaster, including health, contamination, employment, education and housing. There is no doubt that community assessments are relevant for any social project because they provide crucial information about the reality of communities and guide the implementation process on the condition that the activities are adapted to this reality.

²⁰ The role of a community assessment or community diagnosis is to identify the needs and resources available in a community.

However, the main problem was that the same diagnoses were carried out simultaneously for several institutions, and similarly to the psychological interventions, they caused a negative effect on *Morrinos* who were bored to answer the same questions repeatedly. Some of them even got angry and were unwilling to take part in the diagnoses activities anymore (*based on interviews Mo-19, academic; Mo-17 and Mo-52, NGO practitioners; Mo-7, ordinary community member; and informal conversations*). If the institutions had coordinated their activities, by just simply sharing their diagnostic reports, they would have saved time and resources, and prevented the negative impact on the community.

In summary, NGOs and other external institutions provided useful and timely aid to El Morro which was appreciated not only by community members but also by local government officers. For the latter, it was especially valuable because they were not able to attend the needs of El Morro at the first stage of the emergency due to the magnitude of the disaster. The City Council was collapsed, without resources and enough staff to assist the entire city (*based on interviews Mo-11 and Mo-15, municipal officers*). Therefore, without the intervention of NGOs and other institutions, it would have been impossible to tackle all the issues caused by the disaster in El Morro. The work of NGOs and other institutions was crucial in the winter emergency but even more importantly, it brought to light the relevance of coordinating efforts during the emergency period in order to prevent *over-intervention* that would cause an unintended damage to communities.

The organisational chaos in El Morro brings new questions about the most effective strategy for coordinating actions among institutions during the emergency period; these questions are related not only to the role of different actors but also to the limits and restrictions of external interventions and the leadership. El Morro showed that the absence of a leader to coordinate the actions of external institutions was detrimental to the community. Therefore, I suggest that having a leader to this end is fundamental during the emergency period. However, the main questions that arise are: Who should lead the coordination of external institutions during the emergency? Should they be community leaders; local government, NGOs or any other external

institution? What would happen if one of these actors was unable to assume the coordinating role? In this scenario, should NGOs or any other external institution assume the role of coordination inside the community? To answer all these questions it is important to consider the potential consequences of an external coordination inside the community, situation that was clearly observed during the reconstruction period.

The following section shows a different scenario in which an external actor, a social worker from the local government, assumes the inter-institutional coordination in El Morro supporting the role of community leaders. This new situation brings some answers to the questions mentioned above, especially about the impact that an external actor could have in the community when assuming a coordinating role.

7.3. Permanent support from local government

After one month of the emergency, the mayor of Talcahuano City Council decided to appoint one official in each temporary shelter of the city. They were called ‘encargados de campamento’ [temporary shelter coordinator] and were in charge of the general coordination of the temporary shelters.²¹ They were considered to be the official representatives of the municipality and acted as valid interlocutors in the talks between the community and municipal officers, including the mayor. However, the specific tasks, functions and responsibilities of this position were not clear and most of the ‘encargados de campamentos’, were taken by surprise.

Salvador was the social worker in charge of El Morro. A lack of knowledge of El Morro was the main challenge he faced and, for this reason, the first objective he set was ‘to gain the trust of leaders and the community’ (*Interview Mo-11, municipal officer, my translation*). He knew that generating a strong bond with the community would bring positive results. Therefore, he started working in the community every day, interacting with residents and community leaders on a regular basis. After a

²¹ The strategy of having a permanent municipal officer in the emergency shelter was a novel action applied only by Talcahuano City Council in the country.

couple of days, he was informed that his role would be exclusive. This meant that he would not be designated to assume other functions; the only focus would be El Morro. Consequently, he spent every day in the community, including some weekends; he even stayed overnight in one of the emergency tents. Salvador considers this time invested in the community to have been enormously beneficial for understanding the problems and needs of *Morrinos*, as well as their culture. As he says, ‘I could experience in a short period how people lived in the tents and all necessities they had’ (*Interview Mo-11, municipal officer, my translation*). Salvador slowly gained the trust of *Morrinos* and community leaders, who valued the closeness of the municipal officer in El Morro’s everyday situations. People still remember Salvador; he was mentioned during my fieldwork as a key actor during the emergency and reconstruction period. As one of the interviewee mentions, ‘People love Salvador, he was committed to El Morro and he helped people a lot’ (*Interview Mo-19, academic, my translation*).

Salvador supported the role of leaders in several ways. He established a clear diagnosis of the necessities of the community; he helped organise the external aid; and most importantly, he contributed to coordinating the work with external institutions, task that was implicitly delegated by community leaders. As he puts it, ‘They [community leaders] relied on me so I started working with different institutions and private companies that were helping the community’ (*Interview Mo-11, municipal officer, my translation*). The collaborative work that Salvador initiated in the community was useful for reducing the ‘organisational chaos’ that prevailed at that time. This brought a sense of apparent order and organisation, and community leaders found support in him (based on *interviews Mo-1 and Mo-2, community leaders*). Unfortunately, this did not last long. In the reconstruction period, the intrusion of political actors affected the internal dynamic of the community causing a ‘new chaos’. Furthermore, the closeness of Salvador generated some detrimental consequences in the community, aspects that I analyse in the reconstruction period.

The permanent presence of Salvador in the community was key for consolidating strong bonds between the municipality and the community. He could be considered to be the first strong linking bond generated by El Morro during the emergency period. Salvador created a close tie with the leaders of El Morro, especially with Cecilia Vallejos. El Morro, for first time, trusted an external actor who became part of the community for almost two years (based on *field notes* and *informal conversations*).

It is important to note that Salvador was not the only external network created in this period. A second actor, Mathilde, an undergraduate researcher of Anthropology from a local university was also an important bond created during the emergency period. Mathilde spent almost three months in the community, during the winter emergency period, carrying out ethnographic research related to the earthquake and tsunami. Her methodology required her to visit the community every day ‘from very early in the morning until very late’, as she says (*Interview Mo-19, academic, my translation*) and take part in the daily activities of *Morrinos*. Her continued presence in the community was also crucial for gaining the trust of people, as Salvador did. Some people even found psychological support in her, as one interview states, ‘...She was my therapist, she was the only one who listened to me and, for this reason, I really appreciated her’ (*interview Mo-7, ordinary community member, my translation*). For most people, Mathilde was a *Morrina* (female expression of *Morrino*), a term that was exclusively used for people who live in El Morro.

After analysing the main external factors in El Morro, I now examine the main resilience capacities that contributed to coping with the winter emergency in the community. I show that the external factors previously analysed, including splitting the community into two sectors, external aid, lack of coordination amongst institutions and permanent support from local government, impacted the community in several ways and even changed dramatically the resilience capacities reported in the pre-disaster and immediate emergency periods.

7.4. Resilience capacities in the winter emergency

In general, the resilience capacities that I found in the winter emergency were similar to those I observed in the immediate emergency. Social capacities were crucial again at this stage. Nevertheless, some of them experienced a state of *decay* as I explain in the following section. Furthermore, as I argued in the first part of this chapter, economic and structural capacities that were destructed by the tsunami were slightly strengthened at this stage. Due to external aid, people received improvised tents and basic services in the emergency camp. Although people were still living in precarious conditions, the situation was slightly better than the immediate emergency. Yet, employment and income did not experience an improvement at this stage. Additionally, in terms of planning and information and communication capacities, I only observed the local government's support. Due to the nature of this support, I considered it to be an external factor rather than a capacity, as I previously explained about Salvador's role.

Regarding the new capacities that I mentioned in the previous chapter, I only found natural resources, namely the El Morro hill, which became the place where the emergency tents were installed. Therefore, the connection with this resource also increased at this stage. In terms of the cultural capacities, although local knowledge played a crucial role in the immediate emergency, I did not observe the same thing in this period; this capacity was inactive. Similarly, *traditions* were not present because the community organisations 'El Morro Football Club' and 'El Morro Fishermen's union' that used to organise community events, were inactive. However, the *language* and *beliefs* of El Morro as a 'resilient' and 'strong community' reflected in Facebook messages were relevant at this stage, especially to keep the sense of community as I explain in the following section.

As social capacities were the most important in the winter emergency, I discuss them in detail in the final section of this chapter.

7.4.1. Sense of community and place attachment

The sense of community changed radically after the immediate emergency. As I mentioned above, selfishness, individualism and greediness emerged in El Morro when receiving the massive external aid, negatively affecting the internal relationships among *Morrinos*. Despite this negative fact, place attachment remained intact, which was evident when El Morro became split up, the first time. The community was divided into two groups which changed the dynamic of the community. Friends and relatives who used to live close were separated, breaking historical internal networks. Additionally, other families had to leave the community in order to find refuge in the house of relatives in Talcahuano and other cities. Therefore, losing the daily interaction with neighbours and the physical connexion with the community caused serious psychological damage to people:

I lived outside El Morro for six months, I did not want to live in another house, I remember that I cried and I said: 'I cannot live here! I want to return to my house!' I came to see my house destroyed every day and I cried, I saw my house and I was trying to clean it, I was trying to rescue anything ... I was turning off, I wanted to die! , this was the only thing I said when I was living in another house, I wanted to die... At that moment, I did not think that I had children, I did not think anything, the only thing I thought was to return to my house and I wanted my house, nothing else, I wanted my house, I was like a child... (*Interview Mo-7, ordinary community member, my translation*)

Living apart from their community revealed the strong place attachment of *Morrinos*. They could not find refuge or consolation in another place. As one interviewee states, 'The fact that I had to leave El Morro affected me more than the earthquake itself' (*Interview Mo-7, ordinary community member, my translation*). They missed their daily routine, their friends, relatives, their houses and their memories. Many of them even mentioned that they would have preferred to live in a tent, in precarious conditions, than in a house outside El Morro (based on *interviews Mo-7 and Mo-10, ordinary community members; Mo-3, community leader; field notes; and informal conversations*). However, some of them did not have that option; some people had to move to another place to find better conditions for their children, elderly people and relatives with chronic illnesses.

Despite the distance, many of them did not want to lose the connection with the community and visited El Morro regularly. *Facebook* became an important tool for keeping the community together because *Morrinos* used this online social networking to exchange messages, to share photos and videos as well as to inform the community about important meetings and to organise activities. Yet, the main use during the emergency period was exchanging messages of support. *Morrinos* expressed their feelings about the difficult period of the emergency but in a positive way. Their messages tried to encourage the community not to give up which woke up the historical community spirit and the sense of union as shown by the following Facebook quotation:

Stay Strong friends! ...What happened is nothing compared to the strength and union of those who live in this great fishing village ...many greetings...and I have no doubt you will move forward as you have done before when you faced big challenges and overcame the barriers of destiny ...Happy Morro keeps your head up! (*Yo Soy Morrino, 2010e, my translation*).

These phrases of hope, courage and strength were common in Facebook messages: ‘El Morro always revives! I hope to see El Morro reconstructed! El Morro never gives up! El Morro is strong! *Morrinos* are brave! A tsunami will not end our fishing village!’ (*Yo soy Morrino, 2010b, my translation*). Therefore, language and views of El Morro as a ‘resilient’ community were important at this stage. Furthermore, the love for the community is clearly identified in the messages. As one interviewee states, ‘El Morro is something more than a place to live; you carry it in your heart’ (*Yo soy Morrino, 2010c, my translation*). However, these quotations reflect not only the strong sense of community but also the identity of the community. As it was observed in the previous quotations, *Morrinos* describe El Morro as a strong community with brave people who never give up, qualities that will be especially relevant in the reconstruction period when the community refuses to be displaced. These characteristics also reveal the inherent resilience elements of the community. There are also explicit messages related to the capacity ‘to see disasters as opportunities’ which are not frequently identified in the early stages of the disasters, the following message is one example of this:

Dear friends and family, I think it is time to look at what happened as an opportunity to make improvements to the fishing village and convert it into an economic development area as Caleta Lenga [name of another fishing village] did. Let's propose this idea to the authorities and we should see this decline as an opportunity to gain momentum... (*Yo soy Morrino, 2010d, my translation*)

7.4.2. Social capital

In the pre-disaster period and in the immediate emergency, only internal networks were predominant in El Morro, especially bonding ties. However, in the winter emergency some bonding ties were broken due to the individualism and egoism showed by *Morrinos* in the distribution of aid. Furthermore, the split of the community also negatively affected the internal bonds. The most important change occurred during the presence of several institutions and external actors in El Morro which opened the boundaries to the establishment of external ties, especially bridging and linking bonds.

The way in which these bonds were generated results interesting to analyse because not all the external institutions and actors were considered to be relevant networks for the community. The permanence and continuity of the relationship were the variables that could have determined the consolidation of strong linking and bonding social capital that still prevail nowadays. This is the case of two external actors, Salvador and Mathilde. Even though Mathilde and Salvador worked in different areas, the time invested in the community was the only aspect they shared. Therefore, at a first glance it seems that 'the permanent presence in the community' was a crucial factor for the establishment of trust relationships between the community and an external actor. Yet, it cannot be assumed that this is the only factor. Despite this fact, the 'time invested' offers some clues about the way in which communities create permanent external networks, especially bridging and linking bonds in crisis times. It is important to clarify that Mathilde and Salvador were the social bonds recognised by both community members and leaders during the emergency period. Later, other types of social capital will emerge during the reconstruction period but they will only be acknowledged by community leaders.

Therefore, the scope of the interaction of social networks was another factor that would vary in the process of establishing external social networks in El Morro.

7.4.3. Trust

Trust changed completely in the winter emergency; people no longer trusted each other as it used to be in the pre-disaster period and in the immediate emergency. One of the reasons was the selfish behaviour displaced during the arrival of external help that broke not only relationships but also the sense of trust in others. The honesty that historically characterised El Morro vanished during the winter emergency period, generating a crisis of values in the community. *Morrinos* criticised the dishonesty of people who took advantage of the goods obtained during the looting. Consequently, personal values were in conflict with the behaviour of some *Morrinos*. In the interviews, some people stated that despite poverty, honesty should be present in every action:

We lived in extreme poverty, my father abandoned us and we were alone with my mum. We lived in poverty for years and years and I had to beg for bread at the doors of houses... it is nothing related to how much money we have but the way we were raised because my mum taught me honesty. I was raised with values even if we were very poor, we did not know how to read and write but she taught us values and she always taught us that we need to work for earning money and I had to start working since I was a child. Only by working you can get things (*Interview Mo-9, ordinary community member, my translation*).

The dishonesty shown by *Morrinos* would leave deep marks that would be very difficult to remove from the collective memory of *Morrinos*.

7.4.4. Cooperation

Cooperation was one of the strongest resilience factors observed during the winter emergency period. Regarding community kitchens, this strategy improved over time and evolved towards a more sophisticated and efficient system. Only one community kitchen was not enough to feed the entire community; the community kitchen quickly collapsed due to the massive volume of food received and the large number of people in the community. Therefore, having more community kitchens

became a necessity. To this end, El Morro was divided strategically in three sectors and a new community kitchen was implemented in each of these. The community kitchen of which Cecilia Vallejos was in charge became the hub; this place was the place where the food was distributed to the other two sectors (*Muni Talcahuano, 2010f, YouTube video*). Women, especially members of ‘Palomitas Blancas’, were responsible for the internal organisation of the community kitchens in each sector. Each community kitchen prepared its own daily menu according to the food items received, which varied daily. People had three meals, breakfast, lunch and dinner at specific times every day, and *Morrinos* queued around the community kitchen to receive the food. The efficient system implemented in the community kitchens worked perfectly during all the winter emergency period.

However, the situation of the security guards strategy was different. The group of men in charge of the security of the community during the first days of the emergency did not persist during the second period because El Morro received permanent security support from Chilean armed forces. Therefore, men were relegated to a passive role for the first time in their history and women continued to increase their power inside the community²². The strong leadership of women during the implementation of the community kitchens contributed to this empowerment.

Community kitchens could be considered the only activity in which the control and organisation were exclusively in hands of the own neighbours; there was no external intervention that could affect the development of community kitchens. They were relevant not only because they fulfilled the basics needs of the community but also because they contributed to keeping the sense of community and union. Community kitchens became the heart of El Morro, a crucial space where autonomy and

²² This caused some problems in the reconstruction period when men got used to this passive role and became dependant on external help.

leadership took place. This last aspect was crucial; community leaders were essential to maintain this space organised and coordinated.

The level of cooperation shown in the implementation of community kitchens was admired by several actors. Consequently El Morro quickly gained the reputation of being ‘The most organised emergency camp in the country’ (*Interview Mo-11, municipal officer, my translation*). *Morrinos* proudly recognised this fact: ‘All the world says: El Morro is one of the most organised fishing villages in the country, from the beginning we were very organised’ (*Interview Mo-2, community leader, my translation*). Some external actors even mentioned that ‘El Morro was the best emergency camp in the country and in the Bio-Bio region’ (*Interview Mo-11, municipal officer, my translation*). True or not, the popularity of El Morro increased gradually and the extensive media coverage it received was one indicator.

7.4.5. Leadership

Leadership was a crucial resilience capacity during the winter emergency period which brought historical changes to El Morro. Cecilia Vallejos, the natural leader who emerged during the immediate emergency continued gaining more followers as time went by. Her determination, efficiency, proactivity, conflict resolution skills, strong character, empathy and kindness were the skills that quickly captivated *Morrinos* (based on *interviews Mo-11, municipal officer; Mo-19, academic; Mo-7, ordinary community member; Mo-1, community leader; and informal conversations*). Furthermore, her commitment and eagerness to help were important factors for gaining the respect and trust of *Morrinos* (based on *interview Mo-19, academic*). Her role in the community kitchens and efficient distribution of aid was recognised by neighbours, gaining the respect not only of their neighbours but also of external actors.²³ This is why when the referendum period for electing the members of the directory of the Neighbourhood Council came, Cecilia was seen as

²³ The following video shows Cecilia Vallejos being interviewed by a reporter (see minute 1:55) <https://www.youtube.com/watch?v=pCdZIU3M>.

the perfect candidate for guiding El Morro (based on *Interview Mo-11, municipal officer*).

Cecilia received the majority of electoral votes, in the referendum that took place during the winter emergency period, officially becoming the first female president of the Neighbourhood Council. On the contrary, the historical president for more than twenty years, Don Alfonso, finished second. However, an unexpected decision was taken then; the assembly decided that Don Alfonso would continue to be the president despite not having got the majority of votes, and Cecilia would assume the role of vice-president (based on *interviews Mo-11, municipal officer and Mo-19, academic*). The respect for the career, effort and long trajectory of the leadership of Don Alonso was the main reason behind this decision (based on *interviews Mo-11, municipal officer; Mo-19, academic; Mo-7, ordinary community member; Mo-2, community leader; and informal conversations*). Therefore, the power of the tradition prevailed over the Cecilia's popularity. Even though Cecilia was not the formal president, informally she was considered to be the representative of El Morro. Her active role in the community and growing popularity attracted not only several mass media interested in her performance but also political actors who wanted to establish strategic alliances with her. Cecilia quickly became a public figure recognised throughout the country, while Don Alfonso remained in a passive role.

It is important to mention that, apart from Cecilia's personal qualities, there are other two important variables that contributed to her empowerment in the community. The first one is related to physical proximity; Cecilia lived in tents in the emergency camp as most *Morrinos* did, while Don Alfonso moved immediately to a different community losing the daily contact with the community. Consequently, the permanent presence of Cecilia contributed to strengthening her bonds with the community, while Don Alonso's bonds weakened due to his absence. The second factor was the support that Cecilia got from the 'Palomitas Blancas' who helped her with different tasks during the emergency, especially in the implementation of

community kitchens. 'They were always with me, helping me,' are Cecilia's words when she refers to the contribution of 'Palomitas Blancas'.

To sum up, both physical proximity and support from 'Palomitas Blancas' are the factors that contributed to Cecilia's position in the community. However, other factors subsequently affected her leadership in the reconstruction period, which strained her relationship with the community in various ways.

7.4.6. Participation

In the winter emergency, participation had different nuances. Regarding community organisations, 'El Morro Neighbourhood Council' continued assuming an active role, especially in the distribution of aid. By contrast, 'El Morro Football Club' and 'El Morro Fishermen's union' were inactive during all the emergency period. Furthermore, 'Palomitas Blancas', the informal women group identified in the pre-disaster period and in the immediate emergency, also reappeared in the winter emergency to contribute to the implementation of community kitchens.

It is interesting to observe how 'Palomitas Blancas' evolved from an apparently small-scale organisation for economic and recreational purposes to one of the most important organisations during the winter emergency period. The commitment of the members, the teamwork skills and efficiency were the valuable capacities of 'Palomitas Blancas' that were put into practice during the emergency period benefiting the entire community (based on *interviews Mo-19, academic; Mo-11, municipal officer; and field notes*). The resilience principles could be observed clearly in the experience of 'Palomitas Blancas', the disaster became an opportunity for this group of women to develop their inner skills to their full potential.

In terms of informal participation, *Morrinos* in general, assumed a passive role during the winter emergency. However, this situation changed at the end of the emergency period. A specific conflict boosted the community participation of the

entire community in an unexpected way and, the inner participative spirit of El Morro was activated again. This conflict was related to the ‘Don Renato’ boat.

The fishing boat ‘Don Renato’, perceived as ‘the symbol of the destruction’ and ‘the curious sign’ that contributed to the survival of the community because it attracted the TV presenter Laura Bozzo, became the centre of one of the main conflicts in the winter emergency period. The boat that was swept inland by the tsunami remained stranded in the middle of the community for almost two months negatively impacting the lives of *Morrinos*. On the one hand, the ship brought back memories of the catastrophic night of the disaster and the consequent suffering, sadness and desperation lived that night (based on *informal conversations and field notes*). On the other hand, the ship damaged lampposts leaving extremely dangerous wires exposed and causing an electricity blackout for practically two months. The main concern of *Morrinos* was the security and, as they say, ‘We are afraid that thieves would come here at night to steal the few things we have, it is very unsafe’ (*Muni Talcahuano, 2010d, YouTube*).

Unfortunately, the electricity company could not restore power in the community until the boat was removed. *Morrinos* asked many times the local government and other institutions to coordinate the removal of the ship. Nonetheless, they did not find answers. As a result, they felt angry and discontented and organised the first street protest in more than 20 years in El Morro. As one of the community leaders said: ‘We had to do it, we did not have other option...no one gave us a solution...’ (*Interview Mo-2, community leader, my translation*).

On the 22 April 2010, *Morrinos* occupied one of the main streets in Talcahuano, ‘Colon Street’, creating a barricade to block and control the traffic. This caused chaos in the city because Colon Street is the entrance to the city, affecting the reception and distribution of humanitarian aid at city level. This immediately garnered media attention which brought positive results because the ship was removed the next day after the protest (*Muni Talcahuano, 2010d, YouTube*). Don Renato Street Protest is one the most memorable moments for *Morrinos* during the winter emergency; they feel proud of the positive results and the impact of their

protest. The level of participation and organisation showed in this event set an important precedent for the reconstruction period which was crucial for the dialogue between the community and government in the 'housing issue' as I show in the next chapter.

Conclusions

In this chapter, I analysed the second stage of the disaster, the winter emergency. The impact of the 2010 Chile earthquake and tsunami was characterised by the effect of external factors on resilience capacities, which dramatically changed the internal dynamic of El Morro. El Morro was no longer the closed community that it used to be in the pre-disaster and immediate emergency periods; it had to open its boundaries in order to receive external aid. Furthermore, El Morro also showed the *dark side* of community resilience, because individualism and greediness arose in this period.

The impact of external factors on community resilience shows that external intervention does not necessarily lead to positive outcomes, it can also damage the capacity building. People were in urgent need of food, shelter and basic medical supplies and external factors were essential to provide this aid. Consequently, external aid enhanced the economic resources of the community. Nevertheless, on the negative side, external aid became a hindering factor due to lack of coordination amongst institutions and clumsy distribution of aid which negatively affected the trust, cooperation and sense of community. Therefore, external factors can have a dual effect on community resilience. Being aware of the negative impact of external intervention can minimise the damage on community resilience. In this regards, the permanent support from local government is crucial, it can become an enhancing factor for community resilience as El Morro showed.

The capacities impacted by the Chilean disaster in the winter emergency followed the same pattern I observed in the immediate emergency period, this means, the main capacities that contributed to coping with the event had a social nature.

Cultural resources were particularly relevant at this stage. Language and beliefs were important, especially when people encouraged each other not to give up, strongly believing that they were ‘resilient’ and had the capacity to overcome the disaster. Nevertheless, economic and physical resources were also relevant as they enabled the survival of people. These resources improved compared to the immediate emergency due to the external aid received. Although people were still living in precarious conditions, they had food, water and basic services. Natural resources, the El Morro hill especially, became the place where people had to live; therefore, the connexion with this natural resource continued to increase at this stage.

The Chilean disaster also impacted on the *variability* of resilience in the winter emergency and a state of *growth* and *decay* altered several resilience capacities, especially the intangible ones. On the one hand, the sense of community and trust declined due to the greediness and selfishness that emerged after receiving massive external aid. Social capital also experienced major changes. For the first time linking and bridging social capital were created, showing that this capacity grew in this period. Similarly, female leadership continued to increase due to the active role of Cecilia Vallejos and ‘Palomitas Blancas’. Participation was also strengthened mainly because of ‘Don Renato’ protest. Undoubtedly, cooperation was one of the strongest resilience capacities, especially the role of community kitchens which contributed to organising the community and keeping the sense of community despite the adverse effect of some external factors. I also identified the dynamic attributes of community resilience, cooperation and leadership were the *catalyst* capacities in the winter emergency, not only because they were strengthened but also because they were crucial to maintaining a sense of order in the midst of the chaos. Consequently, they positively affected capacities such as social capital, place attachment, sense of community and participation.

In the next chapter, I analyse the reconstruction period when some of the resilience capacities continued to change and new external factors emerged.

CHAPTER 8

THE RECONSTRUCTION PERIOD:

THE JOURNEY TOWARD PERMANENT HOUSING

Introduction

The reconstruction was the most controversial period in El Morro. It was characterised by the construction of temporary housing and the process of building permanent housing. Therefore, the housing need was the main problem of this stage. As I observed in the winter emergency period, community resilience was negatively affected by external factors, although this time new factors arose such as the top-down approach, misleading information, lack of knowledge of local reality and distribution of temporary housing. Furthermore, external aid, an external factor that I identified in the winter emergency, showed a different trend this time.

During the first two years of the reconstruction, several institutions and actors intervened excessively in El Morro while in the second period, the external intervention diminished considerably leaving El Morro isolated again. Although there were several external factors that negatively affected community resilience, the conflicts which emerged from the interaction of these external factors also became an opportunity to strengthen resilience capacities that were damaged in the winter emergency period, especially trust and sense of community.

This Chapter is divided into three parts. In the first section, I present the process of building both temporary and permanent housing, and the external factors that affected them. I then explain the external aid and the consequences on community resilience. Finally, I examine the main resilience capacities that contributed to coping with and recovering from the disaster in the reconstruction period.

8.1. Construction of temporary housing

8.1.1. Top-down approach

The reconstruction period in El Morro started with one of the most crucial changes in the community. After four months living in tents in precarious conditions, the Chilean government decided to give a temporary housing solution to *Morrinos*. Specifically, temporary houses, that were called *mediaguas*, were installed and since then El Morro community was called *aldea* (see figure 8.1). As I explained in Chapter 5, the term *aldeas* (small villages) basically refers to emergency camps composed of several *mediaguas* constructed in the post-disaster period in the areas affected by the earthquake and tsunami (see figure 8.2). The installation of *aldeas* changed again the dynamic of El Morro and the resilience capacities were affected in different ways due to the influence of external factors as I discuss in the following section.



Figure 8.1. Temporary house or 'mediagua' in El Morro (Source: Talcahuano City Council, 2010)



Figure 8.2. Emergency camp or 'aldea' El Morro (Source: Moussard, 2011)

The distribution of temporary housing

The first problem El Morro had to face was the distribution of *mediaguas*. The majority of *mediaguas* were assembled at the bottom of the hill, however, due to the reduced land, some *mediaguas*, approximately ten, had to be located at the top of the hill. El Morro was split into two again generating negative effects. The families at the top of the hill felt excluded during all the reconstruction period, as they say, 'we felt apart from the community' (based on *informal conversations and field notes*). They lost the daily interaction with their neighbours affecting their sense of community and social capital.

Nevertheless, the bottom of the hill was not free of these feelings because the construction of *mediaguas* was an arbitrary process taken by the local government that did not include community participation. The allocation of *mediaguas* did not take into consideration technical, social and cultural variables which enormously damaged the social dynamic of El Morro. The random decision making can be observed clearly in the following quotation from a municipal officer:

I had to build this *aldea* and constructed the *mediaguas* in two days; I had no idea about topography and overnight I had to design the distribution of *mediaguas* that still prevails (*Interview Mo-11, municipal officer, my translation*).

In informal conversations, the actors involved in the allocation of *mediaguas* justified this action by saying that ‘they had to follow orders’. Local authorities were under pressure because the situation in the emergency shelters was critical, the winter was coming and people were demanding to return promptly to their daily routine (based on *informal conversations*). Lacking technical knowledge caused serious damage in the community and put the lives of *Morrinos* at risk. The location of *mediaguas* just at the bottom of the hill increased the landslide risk. Furthermore, the uneven ground caused several flooding during the winter. However, the most dangerous situation occurred when a big tree fell on two *mediaguas*. Fortunately, the damage was only material because people inside the *mediaguas* miraculously survived (*Muni Talcahuano, 2010b, YouTube video*). According to *Morrinos*, they demanded the local government to cut down the trees close to the housing but they were ignored.

This damage could have been prevented if local authorities had considered topographic analysis before installing the *mediaguas*. However, not only technical data would have been necessary but also a social one, namely, local knowledge. *Morrinos* knew the exact characteristics of the ground and they wanted to participate in the assembly of *mediaguas* but authorities did not allow them to do this, as can be observed in the following quotation:

... Authorities told them ‘You do not have to worry, we are going to build the *mediaguas*, you do not build them, you do not have to do anything, you cannot do anything, you are not allowed to do anything, remain quiet and do not complain... we do not have a plan but we will build the camp...’ And people said ‘We know how to build, we know the characteristics of the land and the slope of the ground, we could have done it but they did not allow us to do it’. I think if people had built the *mediaguas*, they would have done it better than the municipal officers... (*Interview Mo-19, academic, my translation*)

This situation was detrimental to the participation of *Morrinos*, ‘they felt infantilised’, ‘they were not valued’ ‘they did not respect them’, are the common

perceptions of external actors when they remembered this period (based on interviews *Mo-19 and Mo-53, academics; Mo-17 and Mo-18, NGO practitioners*). *Morrinos* were willing to help in the construction of their *mediaguas* but the opposition from local authorities led to feelings of frustration and anger. And here there is a crucial point to consider, *Morrinos* built their houses with their own hands in the past and most fishermen have labourer's knowledge learnt by generations in their families. Consequently, there was a local capacity that could have been used; however, local government did not consider it.

If local government had considered the workforce available in El Morro during the assembling of *mediaguas*, they would have benefited the community, especially fishermen because at that time they were in a passive role and unemployed. Furthermore, in terms of resilience, using local resources would have been relevant for promoting the latent capacities of communities, including workforce that would have been not only economically convenient but also socially. The community would have felt included in the decision-making process which would have also increased the commitment and participation of *Morrinos* during the reconstruction period. Unfortunately, the situation did not change; the same top-down approach continued to prevail in the following years.

8.1.2. Cooperation: Improving the quality of *mediaguas*

Despite *Morrinos* not being integrated into the assembling of *mediaguas*, they had an active role afterwards in the process of providing basic services to the *aldea* and improving the quality of *mediaguas*. The first action occurred due to the errors of municipal officers in the design of the *aldea*. They assembled the *mediaguas* in two days but in the design, they did not consider the water and sewer service connections (based on interview *Mo-19, academic*). Unfortunately, the local government did not provide a prompt solution to this problem and after a couple of weeks of living without these basic services, *Morrinos* decided to install them on their own, using their workforce and building materials collected from the neighbours (based on

interview Mo-2, community leader; and Mo-19, academic). *Morrinos* feel proud of this proactive action, as they said, ‘We installed the water service on our own’ (*Interview Mo-8, ordinary community member, my translation*), ‘We did it alone, we bought the pipes and taps’ (*Interview Mo-6, ordinary community member, my translation*). The level of organisation and cooperation were again put into action, but more importantly, it showed the autonomy, self-management and proactivity of *Morrinos* in critical situations.

The improvement of *mediaguas* was the second sample of this autonomy and organisation. Specifically, immediately after the installation of *mediaguas*, people started enlarging them because it was impossible to shelter the large families of El Morro in the limited space of 18m² that encompassed the temporary housing. Therefore, using the workforce available in the community, *Morrinos* improved the quality of *mediaguas* by achieving a high-performance construction standard in some cases. The self-build practice used in the past was back again. The historical construction skills of *Morrinos* were put into practice during the reconstruction period and in less than two weeks *mediaguas* were completely renovated (see figures 8.3). This put in evidence not only the quality of workforce but also the efficiency and capacity of cooperation of *Morrinos*. They did not receive external support to enlarge the *mediaguas*, *Morrinos* used their own human and material resources and despite the scarcity, they found creative ways to make the most of them. One example of this was an elderly woman who recycled the materials of her destroyed house to enlarge the *mediagua*:

The *mediagua* was too small, it had only one room, a sink and did not have a bathroom; there was not space for putting anything. So my daughter and I decided to go to our previous house that was found miles away... We began to dismantle the house by parts, we started on the second floor and so on, we went every Saturday and Sunday to the house and we worked tirelessly. We removed the wooden walls and we used the same walls in the construction of our *mediagua* (*Interview Mo-10, ordinary community member, my translation*).

Enlarging *mediaguas* not only motivated the cooperation and participation of people but also revived the community spirit. *Morrinos* helped each other to improve the

mediaguas, sharing construction materials and skills. The men with more construction experience offered a free service to help those families who could not build their *mediaguas* by themselves. As one interview stated, ‘my neighbour helped us...I am very grateful’ (*Interview Mo-10, ordinary community member, my translation*). Therefore, solidarity was back again. The level of cooperation showed by *Morrinos* in this act of generosity contributed to enhancing the sense of community damaged during the winter emergency period.



Figure 8.3. Improved temporary house or ‘mediagua’ in El Morro (Source: Author, 2013)

Improving the quality of *mediaguas* also impacted the place attachment. It gave *Morrinos* ‘the sense of feeling at home’ as happened in the past when they built their historical houses. Additionally, it is impressive how quickly *Morrinos* improved their *mediaguas* and the remarkable effort that each family put into decorating and furnishing them. During my fieldwork I noticed it, El Morro was different to other *aldeas*, *mediaguas* looked like ‘proper houses’, especially when I went inside them. External actors also share this view:

...From the outside, all *mediaguas* look the same but if you go inside they are fully furnished and equipped, they are tidy, they have their living room, television, LCD television, mattress, double bed...(Interview Mo-11, municipal officer, my translation)

This was a distinctive aspect that I observed particularly in El Morro. Other *aldeas* also improved their *mediaguas* but it was no similar to the level of El Morro. The quality of construction, quantity of houses improved, speed of construction and collaborative strategies displayed in El Morro, were unique (based on *informal conversations, and my own observation*).

From a negative stance, the longing for feeling at home was so strong that *Morrinos* started using credit cards for small and major purchases such as washing machines, clothes, televisions and so on (based on *interview Mo-19, academic*). Unfortunately, many *Morrinos* did not control their credit card spending and due to unemployment, they struggled to make payments which generated a serious problem of debt. *Morrinos* justify this action with their desire of coming back to their daily routine and to have a ‘feeling of normality’ in their lives after more than three months of living in tents in precarious conditions. They wanted to live comfortably despite being in a temporary housing (based on *interviews Mo-6 and Mo-10, ordinary community members; Mo-11, municipal officer; interview Mo-19, academic; Mo-17 and Mo-52, NGO practitioners; Mo-4, community leader; and informal conversations*). These feelings can be observed in the following quotation:

Here many people come to visit us and they are always surprised when they see our plants and flowers outside...If you go inside of our houses, everything is clean because it is our home...this has been my house and I have to live comfortably, I know that this is not a palace but I try to live as best as possible... (*Interview Mo-2, community leader, my translation*)

In the previous quotation is also remarkable how the interviewee refers to the *mediagua* as her ‘home’. This reveals the feeling of attachment that *Morrinos* quickly generated towards their temporary houses. This is considered to be a temporary feeling because people knew that the *mediaguas* were not going to be their permanent houses. As they said, ‘I know that I will not stay for very long in this house but I have to try to live decently’ (based on *field notes and informal*

conversations). Nevertheless, they never expected that the journey towards the permanent housing was going to be so long and painful as I explain in the next section.

8.2. Living with uncertainty: Displacement

What will happen to us? Where are we going to live? These questions were the main concerns of *Morrinos* after the construction of their *mediaguas*. The fear of being displaced seized people, they did not want to move to another place. The displacement issue was the beginning of the long journey towards the permanent housing.

Political authorities refused to reconstruct El Morro in the same place, alluding to technical, economic and legal reasons. Specifically, they argued that it could not be possible to construct houses in the same place because it was a tsunami risk area, and the cost of constructing tsunami resistant housing exceeded the public expenditure destined to reconstruction. Additionally, El Morro was established illegally in a land that belonged to The Chilean Navy, a situation that made even more difficult the reconstruction in the same land. Based on these reasons, authorities offered *Morrinos* to build their permanent houses in another place located in ‘Los Cerros’, an area of Talcahuano region situated in the hills far away from the beach.

The displacement could be justified technically, economically and legally but not socio-culturally. Political authorities did not consider the local reality, values, history, sense of community and place attachment of the community; essential aspects in a potential process of resettlement. National authorities tried to impose decisions that were not contextualised to the culture of fishing villages. This idea can be observed in the following quotation:

...At the beginning, they told us that the houses cannot be rebuilt in the same place but we cannot live in Los Cerros! Imagine how we could move the boats and gears to work, it is impossible! It is the same situation when you bring someone from the countryside, a farmer, to live in the seaside, you cannot do

that...we cannot live in Los Cerros!... (*Interview Mo-7, ordinary community member, my translation*).

Authorities used a top-down approach that led to several conflicts and misunderstandings that had a detrimental effect on the relationship between the community and the government. *Morrinos* immediately showed their opposition to the government: ‘We are going to stay here!’, ‘We will not move!’ ‘They will not throw us to Los Cerros!’ The main arguments of *Morrinos* were: ‘Fishermen need to have access to the sea to work’ ‘We are fishermen, they cannot move us outside the beach’ (*Interview Mo-3, community leader, my translation*). These arguments seemed reasonable; however, for many political actors they were not. For *Morrinos*, the idea of living in ‘Los Cerros’ was inconceivable. A critical point was achieved during the visit of national political authorities to El Morro, as Cecilia Vallejos explains:

...I remember one day a group of Senators came to see our fishing village and one Senator to whom I hate, I cannot say nothing else because I really hate him, he said to us ‘What are you doing here? Why do not you move to Los Cerros?’ And I got very angry and I shouted him: ‘Who do you think you are? We have been living here our whole life, you cannot oblige us to move to Los Cerros... Do you think that we are a pack of dogs that you can throw out? Get out of here! I will not tolerate this!’ He apologised after that but I told him that I will not forgive him because he offended us and ruined the visit so I left the meeting... They did not live here, they did not know our reality, they were in charge of the Reconstruction Plan in the Senate but we never saw them, they never came until that day. How it could be possible that someone who is responsible for the reconstruction, someone that we never saw before comes here and tells us that we have to move to Los Cerros. He cannot do that, they have to come first and see how people are living here. (*Interview Mo-2, community leader, my translation*)

The attitude of Cecilia observed in the previous quotation reflects the feeling of anger and frustration of *Morrinos* towards political authorities who did not pay attention to the particularities of El Morro. *Morrinos* were desperate because after many months living in *mediaguas* they did not have any assurance about the future of the fishing village; they were living in fear and uncertainty. However, the same fear was also the motor that mobilised the inner resilience capacities of the community, especially, the sense of community, place attachment, cooperation,

participation and leadership. Community meetings convened by the 'Neighbourhood Development Council' assembled the whole community; people were committed to defending their historical land at any cost.

Cecilia Vallejos's role was critical in the displacement issue, she imposed her ideas on authorities and her leadership got stronger over time. She was a very well-known community leader along the country, she attended several political meetings in Santiago, the capital, and she was even invited to the Chilean Congress several times. She validated her leadership and got the respect from political authorities. Her role was key to getting the result that all *Morrinos* were waiting for: 'El Morro will be rebuilt in the same place' (Gobierno de Chile, 2010, YouTube). However, the rebuilding process was not free of controversy. Two external elements: misleading information and top-down approach, affected El Morro in the following months, as I analyse in the following section.

8.2.1. Misleading information: 'Words are gone with the wind'

The decision of rebuilding the houses in the same place brought calm and peace to *Morrinos* for some time. However, this would not last very long. On 20 December 2010, the President of the Republic of Chile, in his first visit to El Morro, confirmed the reconstruction of the community in the historical land (*Gobierno de Chile, 2010, YouTube*). Yet, the words of the President were not enough and it was not until more than 10 months later that *Morrinos* had the complete certainty about the rebuilding in the same land. Specifically, *Morrinos* were concerned about two main issues: When will our houses be rebuilt? How long do we have to wait? Unfortunately, these questions were not answered accurately because politicians made promises that were not fulfilled. The misleading information and 'outright lies' by politicians affected negatively the life of *Morrinos* (based on *Interview Mo-19*, academic; and *field notes*). Consequently, politicians lost all credibility. In the following quotation, Cecilia Vallejos mentioned one of the inaccurate deadlines:

... When the President came, he said that we are going to live one winter more, we already passed one so there is one left. I hope next year we will be in our houses because as I say 'the words are gone with the wind' but at the moment, I do not have any concrete facts but the President came and he is the maximum authority so we have to trust him (*Mov. Territorial de Pobladores, 2011, YouTube video, my translation*)

The deadline mentioned by the President of the Republic of Chile in the previous quotation was not met, which led to feelings of rejection and distrust toward political authorities, including not only the President but also other regional and local authorities such as Deputies, Senators, City councillors and Mayor who failed to provide credible information. The poor coordination among political authorities, conflicts between political parties and conflict of interests, are the possible factors that can explain the ambiguous information given to *Morrinos* during the reconstruction period (based on *field notes* and *informal conversations*)

People were confused, they did not know what and whom to believe (based on *interview Mo-19, academic*). They could not trust political authorities anymore, as they said, 'It seemed that they were playing with us, they said something but then they did something completely different' (based on *field notes* and *informal conversations*). *Morrinos* were pleading for concrete actions or official documents that established the deadlines for the construction of their houses, as they put it: 'Words are gone with the wind' (actions speak louder than words) (Based on *Mov. Territorial de Pobladores, 2011, YouTube video; field notes; and informal conversations*). *Morrinos* were desperate and anxious. They even threatened authorities saying that they were going to build the houses with their own hands if the government refused to do it soon (*based on interview Mo-9, ordinary community member; and field notes*)

The waiting period was painful for *Morrinos*, especially for old people who were afraid of dying before seeing their houses completed. This was a common feeling that I observed during my fieldwork. People referred to the situation of old people who passed away without fulfilling their dream of living in their permanent houses:

People are dying here and old people will not have the time to live in their new houses, many people over 90 years old have already passed away... It is

sad because these old people are the most attached to the fishing village. Some old people are not living here since the tsunami. For example, the mother of one of my neighbours has 91 years, and she is very anxious, the only thing she wants is to return to El Morro and live in her new house because she was used to talking to people on the street. All people knew her but now she does not have anyone to talk to (*Interview Mo-3, community leader, my translation*).

Finally, on 24 October 2011, *Morrinos* achieved some degree of certainty. The land in which El Morro was illegally settled was purchased by the government and, subsequently, *Morrinos* received a housing subsidy that covered the total costs of houses. The reconstruction was expected to start in January 2012, (I. Municipalidad de Talcahuano, 2011). However, it was not until the 7 May 2012, three months later, that the rebuild of houses finally began (Talcahuano City Council, 2012). Once more, a deadline was not met. Since then, *Morrinos* were supposed to wait almost one year for the houses to be completed, although it was not until May 2014, one year later, that the permanent houses were finished. In total, *Morrinos* had to wait more than four years, when initially the deadline for the reconstruction was only two years. In the following quotation taken from an interview in March 2011, Cecilia commented about the promised deadlines:

They said that we have to be here only a year and a half more, we trust God that it is going to be like this and we hope that it will not take four or five more years (Vergara Campos, 2011, YouTube, my translation)

Once the construction of the permanent houses was confirmed, a new stage started: the design of the permanent houses. However, this process was not free of conflicts and misunderstandings. The top-down approach negatively impacted several resilience capacities, especially participation, trust, leadership and social capital as I explain in the next section.

8.3. Designing the permanent housing: Top-down approach

As occurred in the construction of *mediaguas*, the lack of community participation in the design of the permanent houses was one of the main problems. Political authorities did not include *Morrinos* in the design of the permanent houses. Some attempts to include people were carried out; however, they did not work. Consultation meetings were organised in which different projects were presented by authorities with the objective of people could decide the most suitable project for the community. Nonetheless, people's decisions were not respected and a different model of housing was finally imposed. This situation can be observed in the following quotation:

...They showed us three projects, three different designs of houses and we had to decide which one we preferred, but at the end they decided another design, not the one we voted. They said: 'These are the houses, end of story!' They did not ask us if we liked them or not, they imposed it. We complained but the design was ready and we could not do anything... They told us that the houses would have more square metre but then we realised that they had less square metre (based on *Interview Mo-7, ordinary community member, my translation*)

People felt disrespected and unvalued by authorities. They felt frustrated and infantilised again. However, at that point, *Morrinos* had no option but to accept the proposal of authorities. They wanted to move as soon as possible to their new houses due to the precarious conditions in which they were living, as they said: 'we gave up'. The reason behind this surrender, according to community leaders, was that they were tired and did not want to make the reconstruction process longer. Yet, not all *Morrinos* accepted the decision of leaders of 'giving up' and some of them are still dissatisfied which negatively affected the internal relationships in the community.

The reconstruction project in El Morro brought radical changes to the life of *Morrinos*. Regarding the housing design, it was compulsory to build a tsunami-resistant house. This was a legal requirement for all communities reconstructed in coast areas after the disaster. In El Morro, the houses feature a 55 square metres

structure on concrete pillars supported by concrete piles and beams. The two main floors are situated 2, 7 metres (9ft) above ground to withstand future tsunami waves as it can be observed in the following figure.



Figure 8.4. Permanent houses in El Morro (Source: Author, 2014)

Despite the long-term benefits of having a tsunami-resistant house, *Morrinos* were not satisfied. The main reason was the size of the houses, as one interviewee said: ‘We are happy because we will have our new houses, but the houses are too small’ (based on *field notes*). The size of the houses was a problem for *Morrinos* due to the socio-demographic characteristics of the community. As I mentioned in the pre-disaster period, the families in El Morro are mostly extended. Therefore, a typical house has to be big enough to shelter the large families. The historical houses had more than four bedrooms, even eight in some cases, but the new houses only have three bedrooms. Consequently, the reduced space made people think about coming back to the traditional self-building practice as illustrated by following quotation:

The houses are too small, here people had huge houses, so we will need to adapt to the new conditions. We will need to enlarge and renovate the house because we are many members in my family, we have our children and grandchildren ... families with two members can fit in this house but not my

family because is too large (*Interview Mo-2, community leader, my translation*).

In informal conversations, people mentioned that they would adapt the ground floor in order to use it as a living room or bedroom, despite the risk that it implies. The ground floor, known as the 'flood room' should not be inhabited because it is the place created to receive the tsunami impact. They also wanted to adapt the ground floor because of the lack of accessibility for disabled people. Planners did not take into account that most people in El Morro are old or will get older in a couple of years. There were only 10 of 78 houses designed for people with physical disability but, unfortunately, the general housing project did not consider this vulnerable group. The houses do not have wheelchair accessibility or stair-lift, as one interviewee complained: 'The stairs are too steep that I am afraid of falling down; I will need to crawl up the stairs' (*Interview Mo-10, ordinary community member, my translation*). Making changes to the houses without proper technical supervision can increase the risk of structural failure in future disasters.

Another issue related to the construction of permanent houses was the proposal of changing the name of the community. This idea came from authorities who wanted to call it 'Villa El Morro' (El Morro villa) instead of the historical name 'Caleta El Morro' (El Morro fishing village). The word 'villa' in Chile is generally used for middle-class communities. The high quality of the permanent houses and the uniformity of design in El Morro resemble the middle-class communities in Chile. Yet, El Morro is a working class community, so the idea of changing the name was based on giving a higher social status to El Morro. As expected, *Morrinos* drastically opposed this idea, as they put it, 'changing the name of the community is like changing the heart to our fishing village'. The name 'caleta' refers to the fishing practice that has historically characterised the community, as they said: 'this is a caleta, not a villa'. For *Morrinos*, changing the name of the community was an absurd idea. The disapproval of *Morrinos* can be observed in the following quotation:

... They wanted to change the name to our 'caleta', they wanted to call it 'Villa El Morro', even the mayor wanted to change the name but they could not do

it, we opposed to this idea. We went to talk to the mayor to tell him that we did not want to change the name. For us, it will continue being our ‘caleta’ (*Interview Mo-9, ordinary community member, my translation*)

Changing the name of the community was only one aspect of the conflict between the government and community. A new problem emerged relating to the size of the houses that negatively affected the community leadership.

8.3.1. The size of the houses: Criticising community leaders

The role of community leaders was criticised by a group of people, which generated tension in El Morro. The root of the conflict laid in communication issues, namely, in the transmission of information related to the reconstruction. Community leaders were the interlocutors between the government and people. Therefore, any information given from authorities was transmitted to people with the certainty that ‘it was true’. Nevertheless, the information was rarely accurate, which caused anger among *Morritos* who blamed the efficiency of leaders rather than authorities. One example of this situation was the size of the permanent houses. Authorities promised a certain size but then this information changed and people found that the houses were going to be smaller than the promised size, as is revealed in the following quotation:

...We had problems with the leaders because they did not represent us, they told us that the houses were going to be big but then we found that the houses were going to be very small, and they told us that nothing could be done, I think they did not do enough. (*Interview Mo-7, ordinary community member, my translation*)

People were dissatisfied with the role of leaders and the criticisms against them intensified over time. The situation reached an extreme point of aggression which affected the life of leaders, specifically the wellbeing of Cecilia Vallejos. As she said: ‘I am very tired because there are many people who treat me badly, they insult me, they do not thank me, not all people are grateful...’ (*Interview Mo-2, community leader, my translation*)

8.4. Las Salinas: A new community next to El Morro

Housing size and the change of the name of the community were not the only concerns for *Morrinos*. The arrival of a new community was the next challenge. Apart from the 78 houses constructed, 96 flats in total were constructed next to El Morro. Some of these flats were inhabited by *Morrinos*, but most of them were inhabited by ‘allegados’ from a community called ‘Las Salinas’²⁴. The characteristics of Las Salinas differ completely from El Morro. Las Salinas was a temporary shelter created by the government which encompassed a range of families from different communities of Talcahuano city, who were left homeless after the tsunami. Therefore, they did not know each other before the disaster. They are low-income families that do low-skilled jobs such as cleaners and labourer. They are not connected to the fishing activity as *Morrinos*. The population in Las Salinas is younger and smaller than El Morro, they are composed mainly by one or two children and I did not observe extended families. They did not own a house before the disaster; they rented a house or lived as ‘allegados’ in the house of relatives. Las Salinas faced several internal problems such as insecurity and violence. According to informal conversations, an illegal drug trade was operating in the community. Most of *Morrinos* were afraid of the ‘strangers’ as they called people from Las Salinas:

...I am not a snob and I get along with all people, I like spending my time with all people, but I am afraid that the ‘strangers’ could affect our lives, our fishing village, it will be complicated because we were alone here, just us... (*Interview Mo-3, community leader, my translation*)

However, another group of *Morrinos* were more willing to accept the new community, although with a certain level of uncertainty and distrust. They stated that it was going to be difficult to trust people that they do not know yet, and the process of knowing each other will take time. Despite this, they emphasised that ‘we have to learn to live together’. It is important to mention that no social programme

²⁴ ‘Allegados’ is a group of young families who did not have a proper house before the tsunami and they were living with their relatives in overcrowded conditions.

has been implemented to help the integration process between El Morro and Las Salinas.

In the previous section, I discussed the ‘housing issue’ and the external factors associated with it. In the next section, I analyse a second issue that characterised the reconstruction period: the external aid. This was an external factor that I identified in the winter emergency period but in the reconstruction period, it showed different nuances. It generated a situation of dependency in *Morrinos* which was detrimental to the empowerment of *Morrinos*.

8.5. External aid

8.5.1. Dependency

The external aid which was called a ‘miracle’ during the winter emergency period, showed another face during the reconstruction. Throughout the first two years of the reconstruction period, people continued receiving constant external help, massively, as it can be observed in the following quotation:

...I remember an anecdote, a TV reporter came to El Morro during the Christmas period and he asked a child ‘What do you want for Christmas?’ And the child answered: ‘Despite knowing that I will not get the present that I want because my father does not have money, I want a bicycle’...The next day, fifteen bicycles arrived, donated by external people (*Interview Mo-11, municipal officer, my translation*).

Unfortunately, in the long term, this permanent help generated a situation of dependency in a group of people who relied exclusively on this aid for their livelihood. ‘The neighbours began to feel comfortable and assumed the role of victims’ (*Interview Mo-11, municipal officer, my translation*). They were living comfortably because *Morrinos* did not have to pay any utility, they were practically living free, and even the food they ate every day was free. Therefore, for some of them, it was no longer necessary to work to live. External institutions even offered some job positions but *Morrinos* rejected them. Salvador realised the risk of the dependency and tried to develop some strategies to prevent it, as he said:

El Morro was a community of self-management and we began to notice dependency on external aid and as a local government, we did not want this. We did not want a passive community, we wanted an active community as El Morro used to be (*Interview Mo-11, municipal officer, my translation*)

The role of Salvador was crucial for controlling this dependency. He took advantage of his strategic role as a coordinator of external institutions and changed the criteria for the reception of external aid. Specifically, when external institutions approached him to ask for the main necessities of the community, instead of asking for material items, he asked for services such as education, training and other essential tools (such as the internet). In the words of Salvador:

We changed our policy, I remember once, a company came and they asked me what El Morro needed and I said: 'We need training for people, we have housewives who want to learn to sew, we need to promote entrepreneurship, and we want to train people'. One day *Telefonica del Sur* [Internet service provider] came and they brought clothes to people and I said thanks but why do you not contribute with the internet for children and we got it, this is the only 'aldea' that has wifi (*Interview Mo-11, municipal officer, my translation*)

Salvador's approach was crucial for breaking the circle of dependency. However, it is important to emphasise that this situation of dependency only happened in a group of people; other people, were against this dependency. The non-dependent group took advantage of the new job opportunities generated through the connection with external networks. They benefited from the training provided by external institutions, especially women and young people. In the case of women, many attended several short training courses in sewing, cooking and crafts. An NGO even installed a community oven where women baked their own bread. For young people, some scholarships were offered by private companies to study other professions such as welding, industrial assembly and nursing technician. The strategy applied to young people was to provide education and support to enhance their employment opportunities because the fishing activity was in crisis in the country after the Chilean earthquake and tsunami. Therefore, diversifying job opportunities became the new approach to deal with unemployment and economic difficulties in El Morro.

Although the main economic activity in El Morro being fishing, the non-dependent group did not resist the idea of learning new skills or to work in other positions such as construction. The fishing boats and gears were destroyed so in the meantime they tried to find other jobs opportunities to sustain their families. As one interviewee stated: ‘People were willing to work in any position, *Morrinos* are very hardworking’ (*Interview Mo-11, municipal officer, my translation*). However, not all people were willing to learn new skills, especially old fishermen who were resistant to change. This analysis may result crucial for understanding the phenomenon of resilience in crisis situations since the capacity of adapting to new circumstances and learning new capacities are relevant elements for the recovery of communities after a natural disaster.

8.5.2. Decline of external aid

The last two years of the reconstruction showed a different face. Once the reconstruction of housing started in May 2012, a decline of external intervention radically changed the dynamic of El Morro. There was a cut in public funding for reconstruction programmes nationwide. NGOs and government institutions could not continue with their social programmes in the communities affected by the disaster. In the case of Talcahuano region, the beginning of the reconstruction of permanent housing was the sign that ‘things were coming back to normal’. Therefore, the permanent presence of municipal officers in the communities was no longer necessary. This is how Salvador had to detach gradually from the community. As he explained:

...I had to return to my normal duties in the City Council. In 2011, they moved me to another programme. I continued in El Morro but with less presence. I think in 2013, I left El Morro definitely, once we sorted out all the issues concerning housing. But I am a social worker so people sometimes call me when they need help, such as applying for scholarships and project grants. I am their connection with the City Council, but I am not present as I used to be... (*Interview Mo-11, municipal officer, my translation*)

People got used to the permanent aid, to the constant presence of external actors and to the several institutions and social programmes. Consequently, the progressive withdrawal of external actors led to feelings of abandonment, disappointment and anger among residents. During my fieldwork was common to hear phrases such as 'We are alone here' 'Now, no one visit us', 'I feel abandoned', 'No one look after us'. This is contradictory because El Morro used to be an autonomous and a closed community before the disaster but in the reconstruction it became dependent on external support. The feelings of abandonment were intensified even more due to the delay of the reconstruction. Authorities were less present during the last two years of the reconstruction which resulted in feelings of disappointment and the distrust towards political authorities was intensified.

Nevertheless, the decline of external aid was also an opportunity to revive the latent resilience capacities. The lack of external aid motivated the reactivation of a community organisation called 'Los Jinetes del Mar', after 40 years of inactivity. 'Los Jinetes del Mar' is a youth organisation created in 1970, originally for political purposes, that later committed to helping the children of El Morro. They organised recreational activities twice a year, in 'Fiestas Patrias' (celebration of Chile's Independence Day) and Christmas. During these celebrations, they organised a variety of outdoor activities and games for children of all ages. Children also received sweets and gifts. In order to fund these activities, they organised several activities such as raffles and bingos. However, in 1973, this organisation could not continue working due to the political restrictions imposed by the military dictatorship.

After 40 years, 'Los Jinetes del Mar' decided to gather again and start working as they did it in the past. What motivated 'Los Jinetes del Mar' to reunite after 40 years? It seems that the withdrawal of external aid was the trigger. During the first years of the reconstruction, external institutions, including City Council, universities, schools and NGOs carried out several activities for children, including major celebrations such as Easter, Children's Day, 'Fiestas Patrias' and Christmas. These recreational activities helped children cope with the trauma caused by the

tsunami. Therefore, the absence of these activities would have negatively affected children. Following this logic, the reactivation of ‘Los Jinetes del Mar’ makes sense because the main goal of the organisation was the children's wellbeing. How did they come up with this idea? The idea of reactivating ‘Los Jinetes del Mar’ arose in one of the most important traditions of El Morro, the funerals. The current president of the group recalled that moment in this way:

We were at a funeral and the idea emerged, because all people come when there is a funeral, even if they are not living in El Morro. So, we asked ourselves: ‘Could we be able to carry out again the activities that we used to do 40 years ago? And all people said: Yes, let’s do it!’ And they asked me to be in charge of the group now. Former members wrote down their contact details and we organised a dinner to plan the activities, 35 members came after 40 years, because the last meeting was in 1973 and we met again in 2013. I was 13 years old when I was in the group but now we are old but we still have the energy to continue working together as we did it in the past... We were 70 members but now we are 35 because some members have passed away...
(Interview Mo-5, community leader, my translation)

It is interesting how a funeral was the gathering point for the renaissance of ‘Los Jinetes del Mar’. The funerals were emphasised in the pre-disaster period as a unique tradition in El Morro, a space where the solidarity, cooperation and union takes place. However, this time, it became the perfect context for recalling memories and for reactivating one of the most important organisations in the history of El Morro.

After analysing the main external factors that affected the community resilience in the reconstruction period, in the next section, I examine the resilience capacities that contributed in the recovery process in El Morro.

8.6. Resilience capacities

In the reconstruction period, the pattern that I observed in the previous stages of the disaster was repeated: social capacities were the most relevant. Similarly, cultural capacities, especially the tradition of ‘La Fiesta de San Pedro’ (Saint Peter’s festival) also revived. This festival also increased the connection with natural resources, particularly the sea. Regarding economic and structural capacities, employment and

income were strengthened. The infrastructure of the community was also strengthened due to the construction of *mediaguas* and permanent houses, which improved the living conditions of *Morrinos*.

Concerning new capacities, local knowledge was negatively affected by the top-down approach implemented by authorities as I showed before in this chapter. The workforce available in El Morro was ignored by authorities. However, local knowledge was subsequently used to improve *mediaguas* and provide basic services. In relation to planning and information and community capacities, I did not observe them at the micro-level, rather, the capacities that I identified in the theoretical framework acted again as external factors, the same situation that I observed in the winter emergency period.

In the next section, I present in detail the most important capacities that contributed to coping with and recovering from the disaster in the reconstruction period.

8.6.1. Leadership

Leadership was negatively affected in the reconstruction period due to the conflicts generated by the housing issue, especially due to the misleading information of authorities. Cecilia was disappointed because she felt that people did not appreciate her work. She refers to all the sacrifices that she had to make in order to lead the community, as she said: ‘I have neglected my family, I have spent my own money for attending meetings and calling people but they do not appreciate all the sacrifices that I have made’ (*Interview Mo-2, community leader, my translation*) She remarked that coping every day with the insults of people, affected her mental health. Despite this fact, she decided not to give up and to continue her role. In order to defend herself, she adopted the same hostile behaviour, especially towards men who according to Cecilia were the most aggressive. In Cecilia’s words: ‘This situation affects me, here in the corner men stand up and insult me when I pass and this is very sad but I do not remain silent and I shout at them’ (*Interview Mo-2, community leader, my translation*)

Cecilia explained that the aggressive behaviour of men was manifested only towards female leaders and not to males which shows the sexist culture predominant in El Morro. The situation was even worse for Cecilia who had to face the hostility of people alone because the president of the 'Neighbourhood Council' did not live in the community. Therefore, she was the target of the resentment of people. During my fieldwork, Cecilia mentioned in informal conversations, her intention of leaving her role of vice-president once the houses were completed due to the ungrateful and antagonistic attitude of people.

Cecilia's feelings were also shared by another leader of the Fishermen's union who had to resign due to the constant criticisms of people which affected his mental health. He was judged regarding his honesty in allocating the aid received from external agencies. He could not stand the distrust of people and he decided to resign. In the following quotation it can be observed how he emphasises the hard work of leaders and the incomprehension of people:

I resigned one year ago because people do not value what we do, we give everything for people but there will be always unhappy people who do not do anything and criticise, I do not know why it is like this (*Interview Mo-3, community leader, my translation*).

Distrust was also felt by Cecilia and other members of the 'Neighbourhood Council'. A group of people thought that leaders were taking advantage of their position and, therefore, were getting more benefits than ordinary people, as a community leader said: 'They thought that the biggest house was going to be mine, but all houses had the same size' (*interview Mo-2, community leader, my translation*)

8.6.2. Trust and Social Capital

As discussed above, distrust increased towards community leaders. Distrust also increased towards political authorities from the central and local government due to the misleading information and top-down approach in the process of building *mediaguas* and permanent housing. Although linking social capital was created, the

relationship became more strained. By contrast, trust towards neighbours was affected positively due to the cooperative actions displayed in the process of enlarging *mediaguas*. Finally, the distrust towards ‘Las Salinas’ revived the strict social control applied to outsiders observed in the pre-disaster period and immediate emergency.

8.6.3. Participation and Cooperation

The ‘Neighbourhood Council’ continued playing a crucial role in the reconstruction period because it had to manage the process of building the permanent houses. It was the organisation that represented the community in official meetings with local and national authorities. Regarding ‘Palomitas Blancas’, they did not continue to be in charge of the community kitchen because they were no longer required in this period. Yet, they continued gathering as they used to do it in the pre-disaster period. Community kitchens were the emblem of cooperation in the immediate emergency and winter emergency. However, because fishermen started working again, there was no economic necessity for running community kitchens. This also contributed to getting back to a sense of normality in the community.

Regarding other historical organisations, once people settled down in their temporary housing, the historical community organisations were reactivated. ‘El Morro Football club’ began to participate in tournaments in Talcahuano region and brought joy back to El Morro, as observed in the following Facebook quotation of one of the football players:

And the happiness is back to El Morro! Such joy when people sang the anthem of the club; it was so exciting! Thank you very much all the people of El Morro who support us (*Yo soy Morrino, 2010a, my translation*).

Along with El Morro Football club, ‘The Fishermen’s Union’ was also reactivated. The precarious conditions of fishermen after losing their boats and tools motivated the members to gather again after several months of inactivity. They were able to attract several opportunities to improve the conditions of fishermen. They received external aid from Holland, local Universities and Chilean government institutions

such as CORFO and SERCOTEC. One year after the disaster, most of the fishermen had their boats and gears and they could go back to sea. The main activity organised directly by 'The Fishermen's Union' also revived: the traditional 'Fiesta de San Pedro' (Saint Peter's festival).

Undoubtedly, the reactivation of 'Los Jinetes del Mar' was one of the most remarkable milestones during the reconstruction, which contributed to increasing the sense of community, cooperation and participation.

8.6.4. Sense of community and place attachment

The sense of community improved compared to the winter emergency due to the cooperative actions of enlarging *mediaguas* and the reactivation of community organisations. Likewise, place attachment was crucial and became more relevant due to the fear of being displaced and the potential change of the name of the community. Cultural capacities, especially traditions, were also important to revive the sense of community. 'La Fiesta de San Pedro' (Saint Peter's festival) was the most relevant tradition in the reconstruction period. Nevertheless, the context of this traditional festival was different after the disaster. *Morrinos* doubted whether they should celebrate it due to the damage caused by the sea as I explain below.

8.6.5 Traditions

- La Fiesta de San Pedro: Forgiving the sea

'La Fiesta de San Pedro' is meant to give thanks to the sea for giving the maintenance that allows fishermen to feed their families. They asked each other: How can we give thanks to the destroyer of our houses and boats? It was contradictory. Nonetheless, they decided to celebrate it, but this time the festivity was going to have a different connotation, it is going to be lived as an act of reconciliation with the sea.

For the first time, external actors were invited. During the mass, the contribution of the Chilean Navy was acknowledged for providing the land where the *mediaguas* were installed. After the mass, the procession took a different route from the usual one. It passed through the emergency housing at the bottom and at the top of the hill and then it continued through the destroyed community. For some *Morritos*, this last part of the procession was shocking because many of them refused to go to that location after the tsunami. For the first time, they saw the magnitude of the disaster, as one interviewee said: ‘it was a touching moment when people saw their houses completely devastated’ (*interview Mo-6, ordinary community member, my translation*). Then, after a couple of minutes of sailing, the boats stopped and a fisherman made a tribute to the sea in which he emphasised the goods that the sea provided them but also how the same sea took them away. As an interviewee recalled, ‘the speech included words of respect, kindness and forgiveness’. The tribute finished casting floral wreaths into the sea. Finally, back on terra firma, the festival continued with the typical food and drinks (Moussard, 2011, pp. 75-78). Undoubtedly, Saint Peter’s festival was full of symbolism.

‘The party was lived as an act of reconciliation; it was a celebration full of feelings, meanings and symbolism: The community was forgiving the sea, or, at least, they were making up’ (Moussard, 2011, p.78). The connection with the sea contributed to positively enhancing natural resources as resilience capacities in the reconstruction period.

Conclusions

The impact of the 2010 Chile earthquake and tsunami on community resilience shows different nuances in the reconstruction period. As I observed in the winter emergency, this period was also characterised by the impact of external factors, mainly hindering factors, on community resilience. Nevertheless, more factors emerged at this stage because the housing need required the action of external agencies. The housing need was the core problem of this period that although had negative consequences for the community also activated resilience capacities.

The external intervention was critical at this stage because people urgently required a permanent solution to the unemployment and homelessness. Nevertheless, although permanent houses were finally built and fishermen went to work after several months of unemployment, the impact of external factors, especially political ones affected dramatically community resilience. The top-down approach, misleading information, lack of knowledge of local reality and lack of coordination amongst institutions, negatively affected resilience capacities, especially leadership, trust, social capital and participation. This finding highlights how external intervention can disempower people and undermine capacity building. Decisions such as changing the name of the community, splitting the community and lack of participation in the distribution of *mediaguas* and design of permanent houses, deteriorated community relations, undermining the place attachment and sense of community.

Physical reconstruction was not aligned with the social recovery which was deteriorated as a result of the disaster. Although local government played a crucial role in the previous stages of the disaster, this time, could not prevent the implementation of a top-down approach from the central government, especially in the design of permanent houses. The top-down approach negatively affected the leadership in El Morro. Due to the delays in the reconstruction, Cecilia was criticised, losing bonding social capital. This reflects how power relations can

deteriorate resilience which can be intensified by unequal gender regimes. In El Morro, patriarchy re-established itself after the disaster which challenges the idea of ‘building back better’ stated in disaster risk reduction policies. Power relations and how it changes over time show that resilience is a capacity that does not necessarily move forward, it can also return to the same pre-disaster level.

Concerning the impact of the disaster on resilience capacities, the reconstruction period showed a similar trend to the immediate emergency and winter emergency: social capacities were the main capacities that *Morrinos* mobilised in order to cope with the disaster. This again draws the attention to the crucial role played by communities in catastrophic situations. The reconstruction period also revealed new *catalyst* capacities, particularly place attachment and participation. They were crucial in the process of demanding the construction of permanent housing in the same land. They also activated other capacities such as the sense of community, social capital, traditions, cooperation and structural ones-particularly housing.

The 2010 Chile disaster impacted upon the *variability* of resilience capacities. In general, resilience capacities were enhanced in this period compared to the winter emergency, especially cultural capacities and participation. Place attachment continued playing a crucial role, and it was even stronger in the reconstruction period due to the fear of displacement. Cultural capacities, especially traditions also revived in this period with the celebration of ‘La Fiesta de San Pedro’ (Saint Peter’s festival). This also had a positive effect on the connection with natural resources, especially the sea. Participation was also strengthened due to the reactivation of community organisations. The decline of external aid reactivated historical organisations, specifically ‘Los Jinetes del Mar’ which contributed to increasing the sense of community, cooperation and participation. The activation of this organisation demonstrates the inherent nature of resilience. The latent capacities of communities can be activated in the face of disasters.

In the following chapter, I present the integrated model of community resilience which is the result of the combination of my findings presented in the three previous chapters and the theoretical model that I presented in Chapter 3.

CHAPTER 9

DESIGNING AN INTEGRATED MODEL OF COMMUNITY RESILIENCE

Introduction

In the previous three chapters, I presented the main findings of the El Morro case study in different time periods, including immediate emergency, the winter emergency and reconstruction. The last stage of my thesis is to design an integrated model of community resilience - an objective that I address in this chapter. As the name indicates, this is an all-encompassing model that combines both my theoretical model of community resilience presented in Chapter 3 and the empirical evidence of the El Morro case study presented in Chapters 6, 7 and 8.

The analysis of the El Morro case study revealed important evidence about the impact of natural disasters on community resilience. The findings not only challenge my theoretical framework but also provide new insights into the capacities and external factors to be considered in modelling community resilience.

This chapter is divided into four main sections. In the first section, I revise the theoretical model and the main limitations after my fieldwork. At the end of this section, I present the new principles that guided the design of my integrated model. In the second section, I introduce the integrated model of community resilience, including the main components and interactions. As the key components of community resilience are external factors and resilience capacities, I devote the last two sections to analysing them. Specifically, in the third section, I discuss the external factors that strengthened and weakened resilience capacities in El Morro. Lastly, in the fourth section, I analyse the capacities that helped El Morro cope with and recover from the 2010 Chile earthquake and tsunami.

Finally, the contents of this chapter enable me to fully accomplish the purpose of my research: ‘To analyse the role of community resilience in coping with and recovering from natural disasters in the Chilean context’ and to answer my research question: What is the impact of the 2010 Chile earthquake and tsunami on community resilience?

9.1. Revising the theoretical model

In order to understand how the findings of El Morro challenge the theoretical model, it is necessary to come back to the theoretical model that I presented in Chapter 3 to appreciate the standpoint from which I understood resilience before the fieldwork. The following figure shows the theoretical model, including the diverse components and interactions (See Chapter 3 for further details)

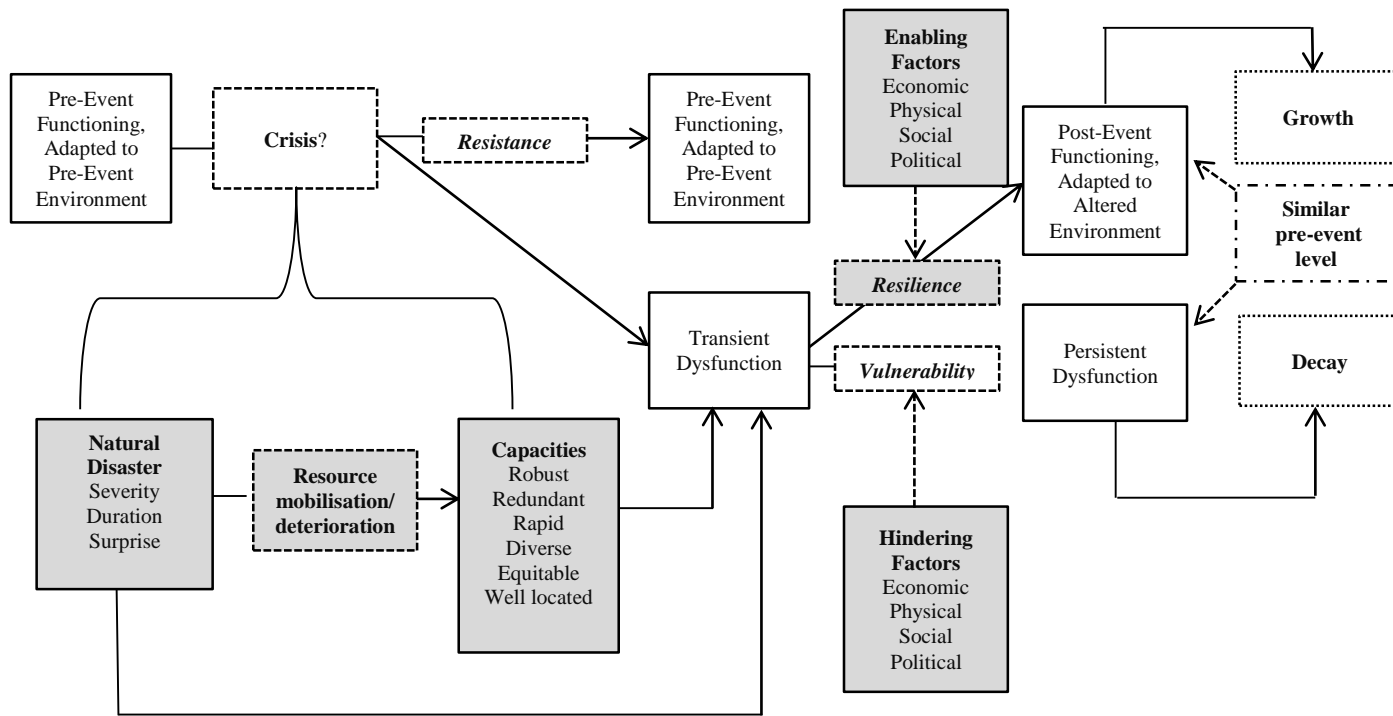


Figure 9.1. Theoretical model of community resilience (before the fieldwork)

9.1.1. Limitations of the Theoretical Model

The findings in El Morro challenged the theoretical framework in several ways. In the following section, I explain the main limitations of the theoretical model and the main findings from the El Morro case study.

a) Complexity

The complexity of the theoretical model is the first conflict point. The several elements and interactions present in the theoretical model reflect an effort to situate community resilience inside a system. In this system three outcomes are possible: *resistance, resilience and vulnerability* (see figure 9.1). I decided to use this theoretical model in El Morro because it provides a general scenario in which resilience could take place. This system with possible scenarios helped me during the fieldwork to be open to the idea that perhaps El Morro was not resilient. It was my baseline from which I observed resilience as part of a general system in which other outcomes are possible-not necessarily resilience.

After analysing the results from the fieldwork, I observed that *resilience* was the scenario that took place in El Morro after the impact of the 2010 Chile earthquake and tsunami. Therefore, the others scenarios, *vulnerability* and *resistance*, are no longer necessary for the purpose of my research. My focus is on *resilience*; consequently, the components and interactions related exclusively to resilience in El Morro are considered for designing my integrated model. Specifying my community resilience model became a necessity also in terms of the contributions of my research. As I explained in Chapter 2, *resilience* is a contested concept and, in the natural disasters field, it is still difficult to agree on what resilience is and how to measure it. Thus, presenting a model that considers only *resilience* can also contribute to resolving these disagreements.

b) Adaptation versus transformation

The theoretical model emphasises the idea of resilience as a process that leads to *adaptation*. However, this idea of adaptation changed in the light of my fieldwork. Now, I see resilience as a capacity that leads to *transformation*. In order to understand this proposition, I first clarify my definitions of adaptation and transformation. To this end, I refer to the field of biology. More specifically, I use the theory of evolution that was pioneered by Charles Darwin as an analogy (Darwin, 2006).

According to the theory of evolution, the main difference between adaptation and transformation is the extent of change in the original organism. In adaptation, the organism retains its original species whilst in transformation a new species develops. And here lies my main argument: El Morro did not just adapt after the impact of the disaster; it transformed, it evolved into a ‘different’ community. Following the idea of Darwin, if the organism is considered to be El Morro and the genetic composition to be the resilience capacities, the evolution in El Morro can be explained as: El Morro changed over time as a result of changes in its capacities, namely resilience. Changes accumulated to the point that El Morro was no longer the same community. In other words, after four years, El Morro transformed. Resilience capacities changed fundamentally at every stage of the disaster. El Morro became stronger in certain capacities and weaker in others, but it was no longer the same community. Even the words of *Morrinos* literally supported this assumption. They referred several times during my fieldwork: ‘El Morro will never be the same’. If we look at the overall scenario of El Morro - before and after the disaster - crucial transformations occurred, especially in capacities such as the social capital, trust and leadership. To mention some examples, El Morro moved from being a closed community to being an open one; from having a male dominated leadership to having a female one; and from being an unknown community to being a famous one.

El Morro was the only fishing village that entirely survived the impact of the event in the Talcahuano region, so the question that arises is *Why did other communities not perform as well as El Morro?* I argue that those communities did not have enough resilience capacities to cope with the event. They were able to adapt perhaps, but not transform. Their capacities may not have been strong enough to allow the survival of the entire community. If I apply the idea of the ‘survival of the fittest’ used by Darwin, I propose that communities with more capacities cope better with disasters and have more chances to survive than those communities with fewer capacities. However, further evidence from other case studies is needed to explore and develop this proposition.

c) Growth and Decay

The last conflict point that emerges is the idea of *growth*. Following the idea of transformation, the main question that arises is if this transformation was positive or negative. In other words, *Was the post-disaster situation better or worse than the pre-disaster situation?* Norris et al., state that it is not necessarily superior in level, character or effectiveness; it is simply different (2008, p. 132). As I stated in the theoretical framework, this assumption can be accepted to a certain extent because although a community cannot be the same after the disruption of a disaster, the difference between pre and post event functioning can imply *growth* in terms of the capacities. El Morro corroborated my assumption. *Growth* took place in the case of capacities that were activated, improved or strengthened in the post-event. In El Morro, there were several capacities that were activated and strengthened such as local knowledge, place attachment and leadership. By contrast, other capacities such as trust were undermined or weakened, especially in the winter emergency period. This can be considered as a state of *decay* of those capacities. Therefore, the result of the transformation is relative; depending on the capacities strengthened or undermined after a disaster, it can imply *growth* or *decay* respectively. The state of *growth* or *decay* is in line with my proposition that resilience is not a ‘pure positive

capacity', it also has a negative or *dark side* which was reflected in the *decay* of capacities in El Morro.

After analysing the main limitations and findings of the theoretical model, it is important to clarify that although my findings challenge the theoretical model, there are important advantages of using it. The main advantage is the consideration of the key components of resilience, specifically capacities and external factors. On the one hand, I consider resilience capacities to be the essential components of the integrated model because community resilience can be observed through these capacities. On the other hand, external factors (identified as enabling factors and hindering factors in the theoretical model) are also crucial. El Morro illustrates how external factors impacted the capacities - positively and negatively - changing the internal dynamic of the community. Both capacities and external factors form the basis of the integrated model of community resilience that I present in this chapter.

9.1.2. New principles of the integrated model of community Resilience

Before presenting the integrated model of community resilience, I discuss some basic principles of this model. Some of these principles were already mentioned in my theoretical framework, although most of them were developed further, in light of my findings.

a) Community Resilience occurs in a process

The El Morro case study showed that resilience occurs in a process. The different components of the model are interconnected; several capacities and external factors interact in several ways over time. Furthermore, any change in any component will affect the entire process. For example, the influence of political factors affected several capacities in El Morro, especially trust and participation.

One of the most interesting findings of my research was the nature of the interactions among external factors and capacities. From the analysis of El Morro, I observed two main interactions, *intra-relationships* and *inter-relationships*. Intra-relationships were observed inside the community, among the internal resilience capacities, and inter-relationships were observed between these internal resilience capacities and external factors. Intra-relationships played a crucial role in mobilising resilience capacities. I also observed that there were capacities that acted as a *catalyst* in activating other capacities after the disaster, including local knowledge, place attachment, sense of community, cooperation, leadership and participation. I propose that *catalyst* capacities are the core of community resilience - the most important capacities that triggered actions towards the survival and recovery of the community. I argue that all capacities are significant for building resilience; nevertheless, depending on the magnitude of the disaster and other contextual variables, certain types of capacities are more important than others. Finally, regarding inter-relationships, they occurred when external factors impacted resilience capacities which had positive and negative consequences for the community and, therefore, a state of *growth* and *decay* is manifested.

b) Community Resilience is a variable and dynamic capacity

Community resilience can change depending on the impact of external factors. The internal dynamic of El Morro changed in every stage of the disaster due to the variations in the capacities. Some capacities such as trust and leadership varied significantly from the pre-event to the post-event. Some capacities were strengthened while others were undermined over time. For instance, after the disaster, the use of local knowledge was strengthened while trust amongst neighbours diminished.

From the previous observation, I propose the principle of *variability* that refers to the changeable nature of resilience capacities at every stage of the disaster. This principle of variability is not only applicable to *time* but also to *context*. As I have

argued throughout my thesis, *contextualisation* is necessary to understand resilience. Resilience varies depending on the context. In other words, different resilience capacities are activated depending on the context. Contextualisation is a principle that I could not test in my research because I used a single case study. Further study of this principle would be of interest.

c) Communities have the potential for resilience

Community resilience can be observed in the set of capacities mobilised after the impact of a disaster. The analysis of the pre-disaster period in El Morro revealed the presence of capacities before the disaster. Some capacities such as local knowledge and women's leadership were in a dormant state before the disaster and were activated in response to the event. Therefore, preliminarily, I assume that in all communities there are latent capacities to cope with disasters. Communities have the potential to become resilient. These capacities are likely to vary from one context to another but a community, theoretically, always have *capacities*. The fact that people are not aware of them does not mean that they do not exist. In general, these capacities can be observable when they are activated in specific situations such as disasters.

d) Communities are active agents

Resilience capacities cannot be activated without people. I argue that community members should not be seen as victims or recipients of external aid, they should be seen instead as *active agents*. The term *active agents* reflect the idea of people seen as 'participants' or 'active actors'. El Morro would have never performed in the way it did without actors such as Cecilia Vallejos, fishermen, 'Palomitas Blancas' and many others. These actors were relevant for coping successfully with the disaster and their actions triggered important changes in the community. *Morrinos* showed that despite the adverse circumstances, they were able to activate inner resilience capacities to cope with one of the worst disasters in the history of humanity.

However, there were also actors that undermined resilience capacities. This was clearly observed in the selfishness and individualism emerged in the winter emergency after receiving external aid. This was called, the *dark side* of resilience. The analysis of the attributes of these actors would be an important area of research in the resilience field.

e) Resilience is the capacity to transform

Resilience is the capacity to transform in the face of adversity. El Morro faced positive and negatives changes after the disaster which led to growth and decay of resilience capacities. This challenges the idea of ‘building back better’ which is a key term in disaster risk reduction policies. The concept was proposed by the former US President Bill Clinton in his role as UN Special Envoy for tsunami recovery after the 2004 Indian Ocean and Tsunami (Clinton, 2006). Since then, ‘building back better’ has been the guiding principle for disaster risk reduction policies. In the Sendai Framework for Action, ‘building back better’ is one of the four priority areas for post-disaster recovery and reconstruction (UNISDR, 2015). Building back better basically aimed at improving the pre-disaster conditions of vulnerable communities affected by disasters and create opportunities to shift development patterns. The main goal is to prevent a recovery process that perpetuates pre-existing patterns of vulnerability and disadvantage (Clinton, 2006). The ‘build back better’ principle adopts a holistic approach to improving a community’s physical, social, environmental and economic conditions during post-disaster reconstruction to create a resilient community (Mannakkara and Wilkinson, 2014, p. 338).

Building back better is the ideal post-disaster scenario. Nevertheless, this is not always the case. El Morro showed that although there were capacities improved after the disaster, other capacities stayed the same or even worsened. For instance, *Morrinos* upgraded their living conditions by constructing new tsunami resistant houses. In contrast, trust and sense of community were capacities undermined after the disaster due to political intervention and excessive external aid. Female

leadership was strengthened after the disaster but during the recovery period, patriarchy re-established itself affecting negatively Cecilia's leadership. Employment and income were capacities that remained the same after the recovery period. Fishermen received new boats and continued the traditional fishing activity. With only a few exceptions, *Morrinos* did not improve their economic condition. Consequently, El Morro was partially 'built back better' but not completely. This finding also challenges the recent approach of resilience as a 'moving forward' capacity (Manyena et al., 2011). Similarly, as the 'build back better' principle, moving forward refers to the positive growth of communities after disasters.

The variability of resilience along with the principles of *growth* and *decay* depicted in my integrated model of community resilience show that 'building back better' is relative. Depending on the context, some capacities can be strengthened, undermined or stayed the same after a disaster struck. This finding can be crucial to manage properly the recovery process of communities. The 'building back better' approach should address the diversity of capacities in the affected communities, including tangible and intangibles resources to promote a sustainable and equitable post-disaster recovery and reconstruction.

f) Resilience is the capacity to learn from disaster experience

I claim that the capacity to transform also involves the ability to learn from disaster experience. I propose that this capacity involves learning from the positive and negative changes in the capacities, in other words learning from *success* and *failure*. Learning from success implies learning from those capacities that were strengthened after the disaster and the strategies that contributed to promoting them. Learning from failure implies learning from those capacities that were undermined after the disaster and the actions that damaged them. Consequently, I argue that learning from success and failure can lead to a better performance in future in the face of adversity.

Although the capacity to learn from the disaster experience was not part of my theoretical framework and has been scarcely studied, I include it in my integrated model. El Morro showed that learning from past disasters, observed in the local knowledge capacity, was a crucial component of community resilience. Measuring this capacity could be difficult because it requires the observation of the response of the same community in future disasters. Future work would involve the use of longitudinal studies to observe the capacity to learn.

The analysis of the principles of community resilience allowed me to refine my original definition of community resilience. I propose that community resilience is **‘the capacity of communities to cope with and recover from disasters, learning from such stress, activating their latent resources and transforming in the face of adversity.’**

9.2. The integrated model of community resilience

Having analysed the main principles of community resilience, my next stage is to design the integrated model of community resilience. The construction of this model addresses my third research aim: To develop a model suitable for analysing community resilience in the context of natural disasters in Chile. Although this model is based on the experience of only one community, it could be applied and adapted to the contexts of others countries. Figure 9.2 presents the integrated model of community resilience.

In general, this integrated model shows how community resilience takes place after the impact of a disaster. As it can be observed in figure 9.2, this is another version of the theoretical model and I only consider the main interactions and components related directly to the resilience phenomenon. Furthermore, several new elements have been added, according to the principles of community resilience presented in the previous section. There are some elements that I explain later in this chapter, namely, the concept of *mixed factors* and *intangible* and *tangible capacities*. The integrated model can be explained as follows:

This model starts when a *disaster* occurs; this can vary in severity, duration and surprise (Norris et al., 2008, p.130). The disaster impacts the pre-disaster resilience of communities, namely, the *capacities* to cope with the event that can be in a latent state. These capacities can be *tangible* (social and cultural) or *intangible* (physical and economic). *Intra-relationships* occur among these capacities and some of them can act as a *catalyst* for others. Furthermore, *inter-relationships* occur when *external factors* impact resilience capacities. These capacities can be undermined or enhanced by the impact of external factors, including economic, physical, social and political factors. These external factors can act as *hindering, enabling or mixed factors*. These factors can improve or weaken these capacities. When these capacities are improved after the disaster, a state of *growth* takes place which represents the *positive side* of resilience. On the contrary, if these capacities are undermined after the event, a *decay* is manifested which represents the *dark side* of resilience. The greater the capacities strengthened after the disaster the greater the resilience. In contrast, the greater the capacities undermined after the event, the lesser the resilience. The outcome of the resilience is *transformation*, as a result of the variations in the capacities. Resilience varies depending on the context, time and power-trust relationships. Changes accumulate to the point that the community is no longer the same. Finally, the process of transformation leads to *learning* from disaster experience which includes both learning from *success* and *failure*.

Table 9.1 introduces the key terms in the integrated model. This conceptualisation provides a guide for understanding my model:

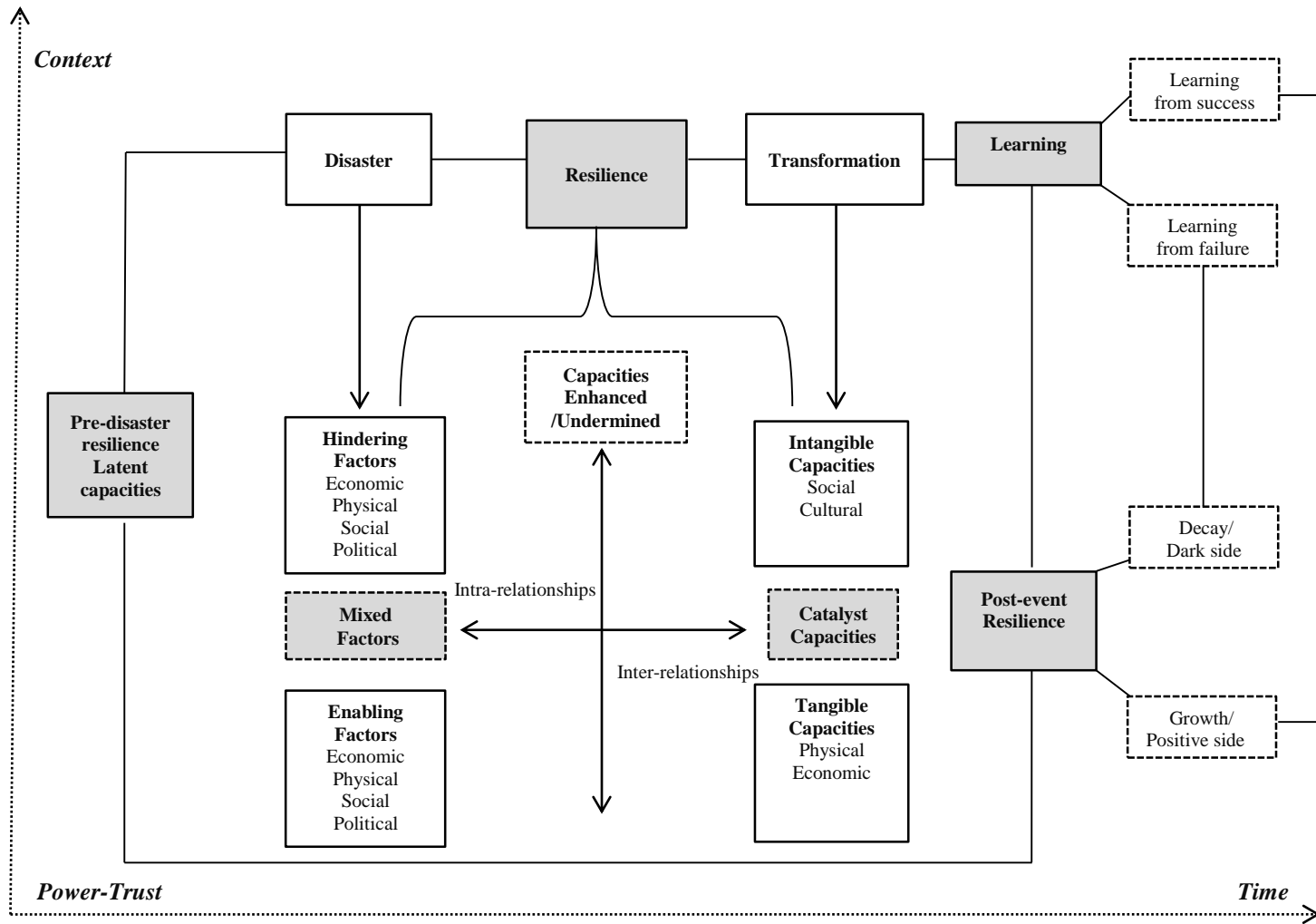


Figure 9.2. Integrated model of community resilience (after the fieldwork)

Table 9.1. Key terms in the integrated model of community resilience

Concept	Definition
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources (UNISDR, 2009)
Resilience	A set of capacities or resources activated to cope with and recover from disasters.
Community resilience	The capacity of communities to cope with and recover from disasters, learning from such stress, activating their latent resources and transforming in the face of adversity.
Capacities	Resources activated to cope with and recover from disasters. These capacities can be tangible or intangible and some of them can also act as a <i>catalyst</i> for others.
Tangible Capacities	Tangible resources activated to cope with and recover from disasters, including physical and economic.
Intangible Capacities	Intangible resources activated to cope with and recover from disasters, including social and cultural.
Catalyst capacities	Capacities that have the potential to activate and mobilise other capacities.
Resilience Capacities	Synonymous with Capacities
Resources	A set of specific assets included in each of the resilience capacities.
Resilience Resources	Synonymous with Resources.
Learning	The ability to learn from disaster experience, including learning from success and failure.
External Factors	Elements or conditions situated outside the community, including economic, physical, social and political which positively or negatively affect the resources. They can act as hindering, enabling or mixed factors.
Enabling Factors	Elements or conditions situated outside the community, including economic, physical, social and political which positively affect the capacities.
Hindering Factors	Elements or conditions situated outside the community, including economic, physical, social and political which negatively affect the capacities.
Mixed Factors	Elements or conditions situated outside the community which can act as a hindering and enabling factor at the same time.
Intra-relationships	Interactions that occur among resilience capacities.
Inter-relationships	Interactions that occur between resilience capacities and external factors.
Growth	The condition in which capacities have been strengthened after the disaster.
Decay	The condition in which capacities have been undermined after the disaster.
Dark side of resilience	Synonymous with Decay
Positive side of resilience	Synonymous with Growth
Transformation	The result of the changes in the capacities over time after a disaster.
Variability	The principle that states that resilience has a changeable nature. Resilience will vary depending on time and context.

After presenting the integrated model of community resilience, I explain the two key components of community resilience: capacities and external factors. In my analysis, I integrate both the theoretical assumptions of these components that I presented in Chapter 3 and the main findings from El Morro.

9.3. Key components of community resilience: External factors

External factors is the first component for analysis. El Morro showed the crucial role that external factors played in building resilience. They impacted the resilience capacities positively and negatively. In other words, they enhanced and undermined resilience capacities.

Although there is no enough literature available about external factors, they were considered in my theoretical model of community resilience. This was based on the principle that communities are not isolated and, therefore, there should be factors that affect the capacities of communities. This assumption proved correct, and the El Morro case study corroborated it. External factors affected the resilience of El Morro, but these factors were more relevant than I expected. They acted in ways that drastically changed the internal dynamic of the community. Some of them were beneficial, while others were detrimental to the community, but all of them played an important role in the community. External factors are crucial for understanding community resilience, therefore, they should be considered for modelling community resilience.

The external factors in this model are classified as *enabling* and *hindering* factors. On the one hand, enabling factors contribute to activating, improving or strengthening resilience capacities. On the other hand, hindering factors undermine or weaken these capacities. An important consideration is that the same external factor can act as an enabling and hindering factor at the same time. This kind of factor is called *mixed factor*.

In the next section, I present the variety of political, economic, physical and social factors that affected community resilience at the different stages of the disaster.

9.3.1. Political

Among all the factors, political ones were the most significant in El Morro. I identified four hindering factors and one mixed factor. Firstly, the *top-down approach* was one of the most relevant hindering factors in El Morro. In order to understand the top-down approach, it is important to clarify the general political structure of Chile. The Constitution of 1980 established a Presidential political system. Chile is a democratic republic and its State is unitary while the territory is divided into regions, as well as provinces and municipalities. In general, the Chilean political structure encompasses four main levels: central, regional, provincial, and municipal. The President is the head of the State or central government. Regional government falls to the Intendant. On the provincial level, the government is run by the Governor. Finally, municipal administration is conducted by the Municipality, comprised of the Mayor as supreme authority and the Council (OAS, 2008)

Although the Chilean administration is functionally and territorially decentralised, the 2010 Chile earthquake and tsunami revealed a centralised decision-making process. El Morro faced two levels of top-down approach, from the central government and from the municipal level. On the one hand, decisions regarding the reconstruction, especially the design of permanent houses were taken at the central government level. Political authorities did not involve the regional, provincial and municipal governments in the decision-making. Consequently, *Morrinos* were left aside from the reconstruction planning. On the other hand, municipal authorities did not include *Morrinos* in the distribution of *mediaguas*. They did not even consider the workforce available in El Morro for allocating the emergency houses.

The top-down approach observed in El Morro coincides with the findings of Dominelli's research in Sri Lanka after the 2004 Indian Ocean tsunami where the top-down approach was one of the key approaches operating among agencies (2015,

p.660). Political agencies may be reluctant to use a bottom-up approach because they can lose control and power over people. Therefore, empowering people can be considered a political threat as social demands can increase, with the possible grow into a popular uprising. However, this view can be detrimental for intangible resources and 'building back better'. The top-down approach undermined social capacities in El Morro, especially participation, trust and leadership during the winter emergency and reconstruction periods. Politicians imposed their ideas and *Morritos* felt frustrated, infantilised and not respected. The top-down approach disempowered people which affected negatively the trust towards political leaders. This led to a deterioration in the relationship with political agencies, affecting the continuity of linking social capital.

Secondly, *the lack of coordination amongst institutions*, including NGOs, universities, local government, religious organisations and public services was another hindering factor that negatively affected the internal dynamic of the community, especially participation, leadership, trust and cooperation. The negative effect was observed in the over-intervention, more specifically in the repetitive psychological interventions and several community assessments in the winter emergency period.

Thirdly, *the lack of knowledge of the local reality* was a hindering factor that affected mainly the sense of community, local knowledge, place attachment and social capital. This was observed in two specific situations. The first one was the decision to displace El Morro and build the houses on a hill, far away from the beach. The second one was the proposal of changing the name of the community. These decisions were taken without considering the local reality, values and history of the community. Although these decisions were finally not carried out, it caused several conflicts between the community and government. Fourthly, the *misleading information* from authorities regarding the deadlines of the reconstruction was another hindering factor. This generated distrust not only towards political

authorities but also towards community leaders. Therefore, it had a negative impact on leadership, trust and linking social capital.

Finally, the *permanent support from the local government* observed in the appointment of a municipal officer (Salvador), had a positive and negative impact on the community. Therefore, it was a mixed factor because it acted as an enabling and hindering factor at the same time. On the positive side, it helped improve the relationship between the community and local government and therefore, enhanced linking bonds. Furthermore, it contributed to reducing the organisational chaos during the winter emergency. Salvador was also useful to diagnose the real needs of the community and to promote Cecilia's leadership. On the negative side, the permanent presence of Salvador undermined the empowerment and autonomy of the community because it generated dependency in the reconstruction period.

9.3.2. Economic

Regarding the economic factors, external aid was the most important factor found in my research. This is considered to be a *mixed factor* because it had a positive and negative impact on the community. On the positive side, the donations of food, tents, clothing, medicine and other emergency items contributed to the survival of the community during the winter emergency period. Similarly, in the reconstruction period, housing subsidies, new job opportunities, donations of boats and gears, and training and scholarships were crucial for overcoming the economic crisis in El Morro. Therefore, external aid contributed to promoting economic and structural resilience capacities in the community.

On the negative side, external intervention could do damage to the social capacity building and the clumsy distribution of aid was the main reason. The massive amount of resources exceeded the capacity of the community to manage properly with the items received which negatively affected social capacities. The union, cooperation, trust and sense of community was reverted to a situation in which

individualism, selfishness and distrust took place. During the winter emergency, the competition for resources undermined bonding social capital and trust amongst neighbours. Community leaders found difficult to apply clear criteria of distribution of resources, and a dilemma about equity and equality emerged which caused several internal conflicts. Attaining fair distribution of resources was not an easy task mainly because the quality and quantity of the received resources varied widely. Community leaders decided to allocate resources according to the size of families and their specific needs. Nevertheless, these criteria were considered 'fair' for some, but 'unfair' for others which divided the community. Community leaders were criticised and trust towards them was deteriorated. This is in line with the situation of the Hurricane Floyd (USA) in 1999 where people criticised the 'unfair distribution of aid' (Moore et al., 2004).

9.3.3. Physical

Concerning physical factors, I identified four factors that affected the dynamic of the community. Two of them are hindering factors, one of them enabling, and one mixed factor. Regarding hindering factors, I identified the *split of the community into two* and *the distribution of mediaguas* which negatively affected the sense of community, place attachment and social capital. On the one hand, the installation of emergency tents and *mediaguas* implied the division of the community. El Morro for the first time was separated. Some families left the community while others remained in the same place but they were distributed in different areas. This caused psychological and social problems in El Morro. A similar effect was observed in the context of the 1995 Kobe earthquake in Japan where shifting old residents to temporary shelters threatened community links (Shaw and Goda, 2004, p.22). On the other hand, the distribution of *mediaguas* lacked technical, social and cultural knowledge which negatively affected the internal dynamic of El Morro. Some families were allocated to isolated areas which broke historical relationships. People living in these areas felt excluded not only from the rest of the community but also from the external aid received. These results are compatible with what other authors

have said about the negative effects that unsustainable and culturally inadequate housing programmes have on communities (Felix et al., 2013; Spokane et al., 2013).

The opportunity *to keep living in the same place* was an enabling factor which contributed to promoting the sense of community, place attachment and social capital. Living in the same historical land also helped preserve the history, traditions and local knowledge. Additionally, the fact that *a new community*, Las Salinas, was planned to be built next to El Morro is considered a mixed factor. On the one hand, because the new community differs to El Morro in many aspects, it could cause problems and threaten the identity of the community. On the other hand, Las Salinas could bring new opportunities for integration. Both communities - Las Salinas and El Morro - could learn from one another, and share their strengths and capacities which are essential for building resilience.

9.3.4. Social

Regarding social factors, I identified four, three of them are enabling factors and one of them is a mixed factor.

Firstly, I consider *looting* to be a mixed factor. On the one hand, it caused collective hysteria and increased the sense of insecurity inside the community. It also decreased trust towards nearby communities. On the other hand, it activated cooperative actions, more specifically, the implementation of security guards who protected the community from mobs and vandalism.

Looting can be defined ‘as both grand and petty larceny of personal property during and after disaster impact’ (Gray and Wilson, 1984, p.2). In general, looting is understood as an act of stealing in crisis times such as disasters or civil unrest. In the context of natural disasters, some authors claim that looting is a rare phenomenon, a myth perpetuated by mass media (Dynes, 2005; Quarantelli and Frailing, 2007, Veszteg et al., 2015). Nevertheless, this assumption comes from the

observations of disasters in developed countries, a reality that may not be applicable to all communities. Evidence shows that looting is a well-documented phenomenon in the context of developing countries, including the 2005 earthquake in Pakistan (Aghabakhshi and Gregor, 2007, p.349), the 2010 Haiti earthquake (BBC, 2010b) and the 2010 Chile earthquake and tsunami (Sanzana Calvet, 2010)

Looting is a socially complex and nuanced phenomenon that poses a difficult moral dilemma in the aftermath of natural disasters. The first issue concerns the intrinsic definition of looting. Looting in a strict sense refers to 'theft'. Nevertheless, after a devastating event, this definition is contested. Is looting ever justified? Certainly, legally, it is not acceptable. But, what happens when looting is used as a survival strategy? For example, after Hurricane Katrina, the survival instinct took over as a consequence of the slow emergency response from the government (Constable, 2008, p. 522). In this disaster, most people were not stealing items for their own personal gain or profit such as televisions and other luxury items but were taking need-based items such as food and clothing (Barsky et al., 2006, p.3; Constable, 2008, p. 522). Under these circumstances, could taking milk, water, diapers or medicine still be considered a crime? Is it morally acceptable? According to Constable (2008) looting could be justified:

‘It is vital that we realise that certain actions, which would be considered “illegal” during normal circumstances, when aimed at ensuring the survival of oneself and others during catastrophic circumstances should be considered, at the time, as no more wrong than an ambulance running a red light whilst *en route* to a car accident! It is also important that emergency managers and the media alike differentiate between acts of survival and acts of civil unrest or malicious crime?’ (Constable, 2008, p.523)

According to Barsky et al. (2006, p.4), the moral ambiguity of looting lies on the lack of distinction between looting and appropriating behaviour. What could be considered to be looting by one individual could very well be appropriating behaviour to another. Appropriating behaviour involves a person taking property owned by another to use it for emergency purposes and, depending upon the item, with the intent of returning it at a later date (Barsky et al., 2006, p.3). Constable

(2008) put forward that 'actions taken to aid in one's survival should not be labelled as looting' (p.524). Conversely, the same author claims that actions involving a malicious intent and performed purely for self-gain should be categorised as looting (Constable, 2008, p.523). In Chile, after the 2010 earthquake, the slow emergency response from the government led to looting in the first 48 hours after the disaster. There were people who effectively partook in looting, stealing items of value such as laptops, jewellery and cell phones. They took advantage of the disastrous situation and stole goods for their own benefit. However, there were also people who did not act maliciously. They took essential items for survival. Therefore, applying Barsky et al.'s definition (2006, p.3), it was an appropriating behaviour. Despite this fact, media reports did not distinguish between looting and appropriating behaviour. Both people stealing nonessential and essential items for survival were labelled as 'looting'. It was considered a criminal act, a theft and a moral breakdown.

The boundaries between appropriating behaviour and looting are diffuse. The dilemma discussion about looting also affect the decision-making process of law-enforcement personnel. Some police officers would turn a blind eye to the looting, while others would make an arrest. Therefore, the use of discretion when deciding who to arrest is critical (Barsky et al., 2006, p.3). In the Chile earthquake, there were instances when police allowed people taking need-based items from the abandoned stores in order to prevent a major chaos. Unquestionably, this adds additional criteria to judge looting in devastating circumstances. The subjectivity and ethical nature of looting lead to several interpretations. Therefore, the analysis of contextual conditions surrounding looting is necessary. The question about what is morally acceptable or not in the context of natural disasters will probably remain open.

After analysing looting as a mixed factor, it is important to mention the enabling factors in El Morro. *Volunteerism* was an enabling factor which I also identified in my theoretical framework. Recreational activities and the visit of famous people such as football players were useful to provide relief and entertainment to *Morritos*

who were suffering from post-traumatic stress disorder. These activities were useful in promoting participation, sense of community and social capital, especially bonding and linking.

I also consider *mass media coverage* and *Facebook* as enabling factors. Mass media coverage contributed to the survival of the community because it attracted humanitarian aid and the visit of several institutions, politicians and famous people. Furthermore, it was useful for opening up the closed boundaries of the community existing before the disaster. Although mass media coverage was positive for El Morro, the situation changes if I consider a general context. Looking at the national level, mass media coverage can be considered to be a hindering factor because it emphasised the dark side of community resilience, rather than the positive side. For example, it highlighted looting instead of the several acts of solidarity. Lastly, *Facebook* helped promote cooperation and sense of community in El Morro. During the winter emergency and reconstruction periods, when El Morro was split into two, the Facebook group called 'Yo soy Morrino' was the space where people supported each other and provided information about the activities carried out in the community. This promoted a sense of togetherness and solidarity.

Finally, it is important to note that the church did not play an important role in El Morro. Although most *Morrinos* consider themselves Catholics, religion was not perceived as a significant resilience factor. The reason behind this fact could be the religious trend in the country. Catholicism is the predominant religion in the country, nevertheless, since the 1960s, the number of Catholics has decreased considerably while the secular population has grown (Valenzuela et al., 2013). Furthermore, there is a large number of people who were baptised Catholic but who are non-practicing. The reality of Chile differs markedly from other countries such as Thailand, Indonesia, Sri Lanka, and other Asian countries where the religion, significantly influence the culture and society. In Chile, religion is more a habit than a practice. This was clearly observed in the celebration of 'Saint Peter's festival' in El Morro which was lived more as a tradition than a religious practice.

The church was not an important factor in El Morro, nevertheless, it is important to mention its potential role as a hindering or enabling factor for community resilience. Religion plays a positive role when encourages individuals to behave morally and donate (Ha, 2015, p.1315). This could be useful to prevent looting and promote volunteerism in disaster-stricken communities. Furthermore, religion plays a pastoral role in devastating events (Ha, 2015, p. 1315; Tearfund, 2011, p.26). The counselling role of the church can be essential in times of crisis when is most likely that people turn to religion. This was observed in a longitudinal study conducted before and after the 2011 Christchurch New Zealand earthquake. The findings of that study showed that religious faith increased among the earthquake-affected areas (Sibley and Bulbulia, 2012). Another additional benefit of the church can be the adaptation of the church building for use as an emergency shelter and for setting up emergency food stores (Tearfund, 2011, p. 24). Nonetheless, religion can also play a negative role. For instance, in the context of Korea, Ha (2015, p.1323) identifies conflicts and competition among different religions, including Christianity, Buddhism and Confucianism in times of disasters. Competition among religions can have negative consequences in the disaster aid delivery as some faith-based organisations can exclude other religious groups from such assistance.

9.4. Key components of community resilience: Capacities

Capacities is the second component that I analyse. Addressing this component allows me to answer my first research aim: To analyse the resilience capacities that contribute to coping with and recovering from natural disasters in the Chilean context.

Capacities in this model are understood as those ‘resources activated to cope with and recover from disasters’. Norris et al. (2008, p.131) mention that these resources could be objects, conditions, characteristics and energies. Although, after my fieldwork, I observed that these resources could also be people, for instance, Cecilia Vallejos, whose actions were relevant for coping with the disaster. As I mentioned

in my theoretical framework, there are several ways to classify resilience capacities. Scholars have not yet agreed on an all-encompassing classification which can be observed clearly in the variety of models available in the academic and non-academic field. The classification proposed in my theoretical framework was useful for my fieldwork to identify the possible capacities that helped El Morro deal with and recover from the disaster. Nevertheless, after my fieldwork, I had to adapt my original classification due to the new capacities found in El Morro. In Figure 9.3 can be observed the capacities that I identified in the theoretical framework and in Figure 9.4 the capacities that I found in El Morro after my fieldwork.

Figures 9.3 and 9.4 show that most of the original capacities were present in El Morro (green colour), but others were not (blue colour), and even more important, new capacities were found (orange colour). In the theoretical model, I identified a set of eighteen capacities distributed in four areas: social, economic & structural, planning, and information & communication. The social and economic and structural capacities (now called physical) were observed in El Morro. Regarding planning, the capacities identified in my theoretical framework were orientated more towards a city level but not to a micro-level as El Morro. Therefore, after my fieldwork, I see them more as external factors than capacities. For instance, the local government support that I considered it to be *a mixed factor*. Regarding the information and communication capacities, with the exception of risk knowledge and assessment (now called local knowledge), the others capacities were not strong enough to be considered individual capacities. They are rather seen as indicators of the existence of others capacities such as trust and local knowledge. Concerning the new capacities observed in El Morro, they were mainly cultural, including traditions, local knowledge, norms, values, language and beliefs. Additionally, I found two other new capacities, place attachment and natural resources, in the social and physical capacities respectively. In conclusion, a total of 19 capacities constitute the final set of capacities in El Morro, of which 7 are new capacities (*)

Before analysing each of these capacities, I consider it important to understand the nature, characteristics and dynamic attributes of these capacities, aspects scarcely studied in the resilience field. In the next section, I examine these aspects.

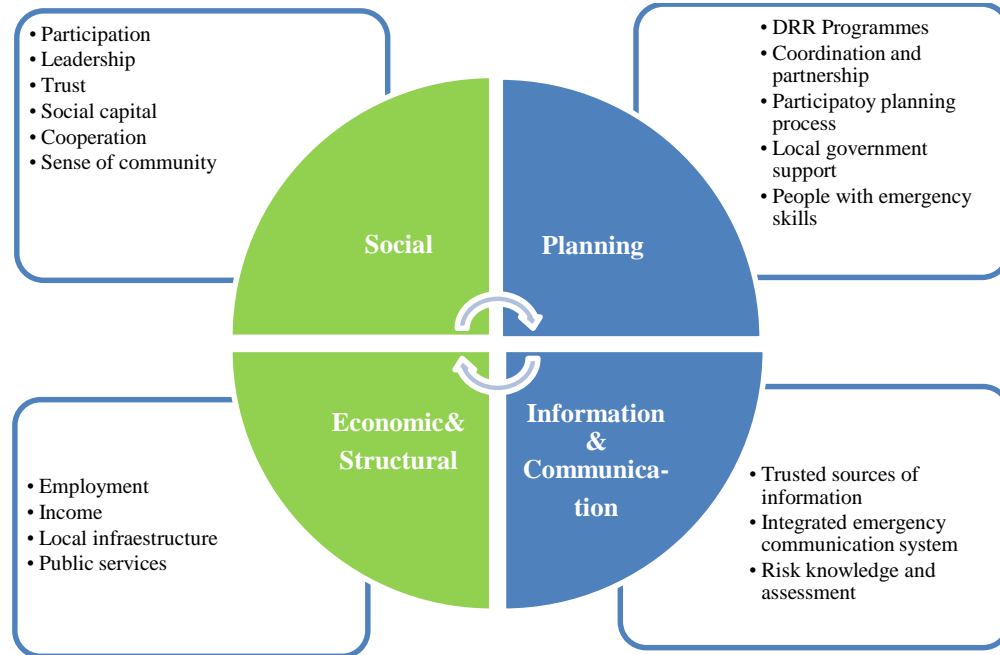


Figure 9.3. Capacities identified in the theoretical model

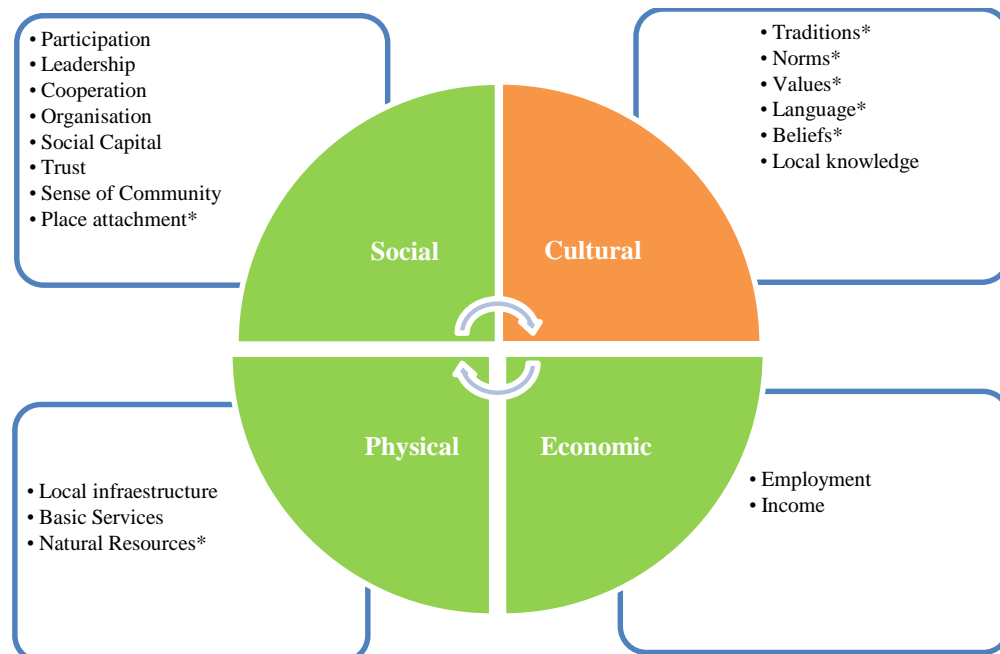


Figure 9.4. Capacities found in the El Morro case study

(*) New capacities

9.4.1. The socially constructed nature of resilience capacities

One of the main findings from my fieldwork was the intangible nature of capacities. Most of the capacities found in El Morro are immaterial. Social and cultural capacities are essentially intangible, while economic and physical capacities are tangible. This finding suggests the socially constructed nature of resilience. As I mentioned in Chapter 2, social resources are often overlooked in disaster risk reduction programmes and the attention is focused mostly on material and economic ones. This finding opens the debate about the value of social resources for coping with and recovering from disasters.

The predominance of intangible resources in El Morro provokes new questions in the resilience field. The first question is *Why were the capacities activated in El Morro more intangible than tangible?* My first proposition is related to the characteristics of El Morro. I assert that because El Morro is a low-income community, not many economic and physical resources were present. In these conditions, it is more likely to use intangible resources which are usually more available than physical ones. My second proposition relates to the severity of the disaster. The 2010 Chile earthquake and tsunami completely destroyed El Morro; only a few houses were left standing. In this extreme context, where no material goods were left, people are more likely to put into action non-material goods to survive and recover from the event. My last proposition comes from the singular characteristics of El Morro. The common history, closed boundaries and bonding networks could have greatly reinforced the intangible resources, such as local knowledge, cooperation, values and traditions. The answer to the predominance of intangible resources in El Morro could be found in one or in all these propositions. More evidence from other case studies is necessary to prove them. It could be interesting to test these propositions in different types of communities, such as in high-income communities, in communities affected by less severe disasters or in opened communities.

The socially constructed nature of resilience unveils the intimate connection between resilience and social capital. Murphy (2007, p.297) states that social capital may work to improve a community's resilience to risks and hazards. In general, social capital is a term that encompasses social networks, social contacts, social cohesion, social interaction and solidarity (Mathbor, 2007, p.360), which facilitates collective action. Disaster response is a classic situation involving a collective action for mutual benefit (Dynes, 2005, p.1). Using social capital allows individuals and groups to accomplish greater things than they could by their isolated efforts (Patterson et al., 2010, p.127). In a disaster context, using social capital as a capacity for collective action can be crucial to reducing the impact of natural disasters and increasing the chances of survival and recovery.

Several studies have pointed out the importance of social capital in disaster response. Social capital can be a key factor in communities' economic and social recovery (Fleming et al., 2014, p. 1482). Dynes (2005, p.7) highlights that during the emergency period, social capital is the form of capital that serves as the primary base for a community response. Studying the post-earthquake recovery process in Kobe, Japan and Gujarat, India, Nakagawa and Shaw (2004) found that communities with social capital are more efficient in rescue, relief and recovery as well as enhancing collective actions. A study undertaken by Aldrich (2011, p.595), after the 1995 Kobe earthquake in Japan, came to similar results: social capital proved to be the strongest and most robust predictor of population recovery after the catastrophe. Another research conducted by Murphy (2007) reached similar conclusions after studying the 2003 electricity power blackout in Canada and the United States and the 2000 water-borne disaster in Walkerton. She found the positive relationship that exists between social capital and resilience and how these resources can be key for emergency management.

The social and intangible nature of resilience capacities found in El Morro indicates the importance of investing in this type of capacities. As I mentioned at the beginning of this section, most of the disaster risk reduction programmes focus on

investing in tangible and physical resources, such as the construction of tsunami-resistant buildings and tsunami barriers. Why do programmes not invest in social resources such as participation and local knowledge? El Morro revealed that social capacities were crucial for the survival of the entire community. However, not much attention has been placed on them. I propose that the immaterial nature of these capacities could be the main reason. Social capacities are intangible, they cannot be easily perceivable by the senses, therefore, it is difficult to observe and assess them. By contrast, tangible capacities, either physical or economic, such as income and employment are more visible; consequently, they receive a major investment. This disadvantage can be the main hindrance to promoting social capacities in disaster risk reduction programmes.

Although social capacities cannot be easily measured, there are several advantages that justify the investment in them. They are easily accessible, inexhaustible, free and abundant. Some even increase when they are utilised, such as trust and participation. Dynes (2005, p.7) emphasises that social capital is the only form of capital which is renewed and enhanced during the emergency period. For instance, local knowledge is a free resource, no economic cost is involved in using it and, it is easily accessible. This was observed during the winter emergency period in El Morro when it was activated immediately after the impact of the earthquake, leading to a safe and prompt evacuation. Local knowledge can also accumulate over time when it used, for instance, in future disasters. By contrast, a tangible capacity such as a tsunami resistant house is not free, it has an economic cost and, it is not easily accessible. For instance, people in El Morro had to wait more than four years to receive their new houses. Physical capacities are also scarce and they deteriorate with time when using them. In conclusion, social capacities have more advantages than physical ones. This critical difference could contribute to promoting the use of non-conventional resources in the design of disaster risk reduction policies in developing countries.

Social and material resilience

The El Morro case study showed that although the majority of capacities were social, the presence of material capacities was also necessary for the recovery. Therefore, both intangible and tangible capacities are complementary and necessary to cope with the disaster. For instance, in the immediate emergency, local knowledge, cooperation and sense of community were the main capacities that contributed to the survival of the entire community. However, they were not sufficient; also necessary were physical capacities such as El Morro hill to evacuate. As a result, the social capacities, and the hill were necessary and sufficient for the survival of people. If it was not for the hill and these intangible capacities, El Morro never would have survived. To support this argument, I can take the example of neighbouring communities, which had access to the same hill as a resource but they did not use it as an evacuation zone. People from those communities remained in their houses or run away to other sectors, which brought deadly consequences. Why did these nearby communities not suffer the same fate as El Morro? I maintain that these communities did not have enough social resources, especially, local knowledge. They are not fishing villages, so they did not have the same local knowledge as El Morro had. Thus, even if there was a physical resource available, this was not sufficient for the survival of these communities. They needed the local knowledge and other intangibles resources to recognise El Morro hill as an evacuation zone.

The complementarity between social and physical resilience capacities was observed not only in the emergency period but also in the reconstruction period. In this stage, physical capacities played a crucial role; people required physical and economic capacities to reconstruct their lives, including houses, basic services, jobs and income. These physical and economic capacities were necessary, but again, they were not sufficient because, in order to access to those tangible capacities, people had to activate social capacities. They had to coordinate actions, participate in meetings, and develop networks with external agencies. Therefore, intangible

capacities were also necessary. If El Morro had not rebuilt their houses and fishermen had not received boats and gears, however, the abundance of social capacities, El Morro would have never recovered from the disaster. Consequently, the combination of tangible or physical and intangible or social capacities was necessary for recovering from the disaster. However, it was not sufficient; the presence of external factors, such as humanitarian aid and local government support were also necessary to recover from the event. The presence of external factors was also necessary after the immediate emergency. In conclusion, in all stages of the disaster, the combination of social and material capacities was necessary for coping with and recovering from the disaster. Yet, only during the immediate emergency, both social and material capacities were sufficient. In contrast, in the reconstruction period, they were not sufficient, external factors were also needed.

Change and connectivity

The complementarity between social and material resilience observed at different stages of the disaster proves the dynamic and changeable nature of resilience over time, which are the main principles of community resilience. Change is a concept that has not been largely studied in the context of natural disasters. The main studies have been carried out at the University of Delaware's Disaster Research Centre (DRC). The studies have explored the comparison of changes in community structure at different times.²⁵ The findings suggest that certain critically important elements in the response had no pre-response existence. This phenomena was called emergence (Dynes, 2005, p.7). For instance, Cecilia's leadership was a new capacity that had no pre-disaster existence, therefore, it could be considered as emergence.

In his classic work 'Organizational involvement and changes in community structure in disaster', Dynes (1970, p.1) concluded that disaster can change the community structure and the effects can be both disorganising and integrative. On

²⁵ The concept of transformation introduced in this chapter coincides with the idea of change proposed by DRC's research.

the one hand, disorganisation is a natural process after the impact of a natural disaster as communities in their daily existence are not structured to cope with disasters. On the other hand, integration is the development of a new structure capable of coping with the event. As disorganisation and integration are natural changes within communities, resilience capacities also experience both processes. Therefore, social and physical resilience do not necessarily move forward smoothly, the disorganisation may cause conflicts within the communities. Yet, once the integration is achieved, a change or transformation can take place. El Morro faced different conflicts over the course of the disaster such as the distribution of aid and the demand for permanent houses. These conflicts caused disorganisation among all resilience capacities, including social and physical. Nevertheless, at the end of the reconstruction period, El Morro was able to gain a new state of integration. However, the changes undergone by the community caused positive and negative changes in the capacities, phenomena that I called *growth* and *decay* in the integrated model.

During the process of disorganisation and integration, the community is able to control more resources which increase its ability to act collectively (Dynes, 1970, p.6). However, El Morro showed that the community not only gained resources but also interactions which I called *intra-relationships* (among resilience capacities) and *inter-relationships* (between external factors and resilience capacities). These interactions reveal the connectivity of communities. According to Putnam (2000, p.21), the varieties of connectivity in communities are different forms of social capital, including bridging (or inclusive) and bonding (or exclusive). Bonding social capital is inward looking and tends to reinforce exclusive identities and homogeneous groups such as ethnic fraternal organisations and church-based women's reading groups. Bridging social capital is outward looking and encompasses people across diverse social cleavages such as civil rights movement and ecumenical religious organisations (Putnam, 2000, p.21). Linking social capital has been recently added to Putnam's classification. Linking social capital is more vertical, connecting people to key political (and other) resources and economic

institutions - that is, across power differentials (World Bank, 2004, p.4). Bonding, bridging and linking social capital can facilitate the mobilisation of resilience capacities and therefore, promote the collective action to deal with the new tasks originated from the disaster. El Morro was able to build these three types of social capital which I explain in more detail later in this chapter.

In the next section, I present the dynamic attributes of the capacities that challenge my theoretical framework.

9.4.2. Dynamic attributes of resilience capacities

In the theoretical framework, I included three dynamic attributes of resources: robustness, redundancy and rapidity. Nevertheless, it was difficult to observe these attributes during my fieldwork. The main difficulty was the criteria for defining a capacity as robust, redundant and rapid. Neither Norris et al. (2008) nor Bruneau et al. (2003) have provided specific criteria to assess them in the reality of communities affected by natural disasters. The intangible nature of the capacities found in El Morro makes this task even more difficult. The fact that I could not test these attributes in El Morro does not mean that I disprove them. On the contrary, I consider them relevant for the analysis of capacities. Yet, rather than seeing them as 'attributes' I consider them to be 'conditions' that can increase the effectiveness of capacities to buffer or counteract a disaster. More studies are needed to validate this proposition.

Although the dynamic attributes proposed by Norris et al. (2008) and Bruneau et al. (2003) could not be observed during my fieldwork, other attributes were found: variability, flexibility and appraisal. The first attribute of variability is based on my observations of the capacities in every stage of the disaster. As I mentioned earlier, El Morro was not the same community after the impact of the disaster due to the accumulation of changes in the capacities. For instance, in the pre-disaster period, male leadership was predominant while in the post-disaster period the leadership

was female. Apart from this variability, the capacities were also flexible to cope with the impact of the event. For example, in terms of cooperation, 'Palomitas Blancas' showed the flexibility when using their skills to carry out the community kitchens, a new task that they had never implemented before.

The last attribute is the appraisal of capacities which is an attribute that has not been observed in other models of community resilience. El Morro case study showed that the appreciation of resources was relevant to activate them. For instance, local knowledge, namely fishing experience, was a resource enormously valued by *Morrinos* that triggered immediate actions after the impact of the disaster and contributed to the survival of the entire community. I propose that the awareness and appraisal of capacities contribute to the activation of resilience. The greater the appraisal of resources the greater the activation. Undoubtedly, more evidence from other case studies is needed to support this proposition.

As I mentioned in the integrated model of community resilience, there were some capacities that acted as a *catalyst* in activating other capacities. Although not all the capacities acted as catalysts, I propose that all resilience capacities have the potential to activate and mobilise others. They can act as a catalyst depending on the stage of the disaster (time) and the context, this means, the variability principle stated in my integrated model. For instance, the catalyst capacities in the immediate emergency period were local knowledge and sense of community. In the winter emergency, they were cooperation and leadership and in the reconstruction period, they were place attachment and participation. Although *catalytic* was not an attribute shared by all resilience capacities in El Morro, it would be an important dynamic attribute to be considered in future research.

9.4.3. Resilience capacities in El Morro

The nature and dynamic attributes of resilience capacities have been established. Therefore, the next stage is to analyse the capacities that helped El Morro cope with and recover from the disaster, including social, cultural, physical and economic capacities. For practical purposes, I analyse them separately. In the following section, each capacity along with the main *intra-relationships* and *inter-relationships* are analysed in order to provide a better understanding of community resilience in El Morro.

9.4.3.1. Tangible capacities: Economic and physical

Economic and physical are the main tangible capacities found in El Morro, including employment, income, local infrastructure, basic services and natural resources. As I explained previously, though the majority of capacities that I observed in El Morro were intangible, the activation of tangible capacities was also necessary for coping with and recovering from the disaster.

a) Economic

The main economic capacities observed in El Morro were *employment* and *income*. The household ability to generate income was severely affected by the tsunami. Fishermen lost their boats and other fishing equipment. Because fishing was the primary source of income for *Morrinos*, fishermen were not able to find another source of livelihood. Therefore, the economic capacities were not variable and flexible enough to resist the economic impact of the disaster. As I mentioned in the theoretical framework, having a diversified and flexible employment capacity is crucial for overcoming economic losses in the aftermath of disasters. As a result, people had to rely on the external aid to survive which caused dependency in some groups of people. The dependent group resisted the idea of working in a different area and they rejected job positions offered by external institutions. Other groups,

however, showed the capability to adapt to the new circumstances and accepted the new job opportunities. They diversified their skills and increased their employability. They learnt new skills that can be useful to face future disasters, especially economic disasters such as the fishery's decline. The disaster not only brought new jobs opportunities but also educational ones, such as scholarships and training courses that did not exist in the pre-disaster period. The impact of the disaster on employment and income was uneven. Although resilience capability was not observed in the dependent group, it was present in the non-dependent one.

Economic capacities were intrinsically connected to some socio-cultural ones. For instance, place attachment and local knowledge were crucial to promote the identification of the community with the fishing practice. Nevertheless, in some cases, place attachment and local knowledge were so strong that some people, especially old fishermen, were resistant to change. Apart from the interaction with socio-cultural capacities, there were external factors that positively and negatively affected employment and income. External aid, as I explained above, was a mixed factor. On the one hand, it brought new job opportunities and also helped revive the economy through the donations of boats and gears. On the other hand, it caused dependency on external aid. Additionally, the top-down approach that did not include the workforce available in El Morro was a hindering factor that affected the economic capacities in El Morro.

b) Physical

Physical capacities, including *local infrastructure*, *basic services* and *natural resources* are a set of tangible resources which were also relevant for coping with and recovering from the disaster. Local infrastructure and basic services were identified in my theoretical framework; nonetheless, natural resources were an unexpected finding in my research.

First, local infrastructure and basic services - namely the basic installations and services needed for the functioning of the community - were essential after the impact of the disaster. Tsunami waves destroyed boats, housing, cars, telephone lines and utilities. Housing was the physical resource most appreciated by people, it was considered to be more than just a place to live, was the place where the history and memories of *Morrinos* were consolidated. Housing was a resource directly connected with the strong sense of place attachment. This is the reason why housing was the most significant issue during the reconstruction period. The evolution of the housing issue was marked by a number of conflicts. The lack of community participation in the construction and distribution of *mediaguas*, enormously damaged the internal dynamic of the community. Likewise, the process of building permanent houses was not free of controversy, as in the case of *mediaguas*, people were negatively affected by the top-down approach. Furthermore, the risk of displacement caused several misunderstandings that strained the relationship with political actors.

Despite the negative impact on housing, the tsunami also brought some positive consequences. Before the disaster, people were living illegally in a land that belonged to the Chilean Navy. Nonetheless, after the tsunami people got the ownership of land and property. The permanent houses were also free for people, they did not have to pay the high housing costs. Other positive benefits were the tsunami resistance design of the houses and tsunami barriers. These resources did not exist before the disaster. They represent an improvement in the physical capability of the community to cope with future catastrophes which can help save lives of *Morrinos*.

Second, natural resources, namely El Morro hill and the sea were other crucial capacities found in my research. Unfortunately, in the community resilience models available, the role of natural resources is scarcely mentioned. El Morro showed that natural resources were essential not only during the emergency but also in the reconstruction. El Morro hill was the only tangible resource that was not destroyed

by the tsunami. This resource was not much appreciated before the disaster because the access was restricted and, therefore, people could not use it. Nevertheless, after the tsunami, this situation changed, people used the hill in the evacuation process and it became literally in the 'saviour' of the community. During the emergency and reconstruction periods, the hill was the temporary home for *Morrinos*. The tents and emergency housing were installed on the hill, and people had to live for more than four years there. Therefore, the connection with this resource increased enormously after the disaster. By contrast, the connection with the sea decreased because it was considered the 'destroyer' of the community. Nevertheless, 'La Fiesta de San Pedro' (Saint Peter festival) contributed to recovering the bond with the sea.

In general, both El Morro hill and the sea are intrinsically connected to local knowledge and place attachment. On the one hand, the community owes its name to the El Morro hill. On the other hand, the sea provides the livelihood of the community. External factors threatened the relationship with these resources, including the top-down approach and lack of knowledge of the local reality. These factors were evident with the intention of displacing El Morro and even changing the name of the community. The crucial role played by natural resources in building resilience in El Morro could open the door for future research.

Finally, in terms of the attributes of physical capacities, a crucial difference was found between local infrastructure, basic services and natural resources. Local infrastructure and basic services have the characteristics of tangible resources: they are not free, they have an economic cost, they are not easily accessible and they are limited. By contrast, natural resources in El Morro, despite being tangible, do not present the same characteristics. Interestingly, they have the same qualities of social and cultural resources. The sea and the hill are free, abundant, inexhaustible and easily accessible (with the exception of El Morro hill that was inaccessible before the disaster). This finding might not be applicable to all natural resources. For example, trees are natural barriers to tsunamis and can be reduced in number over time due to deforestation.

9.4.3.2. Intangible capacities: Social and cultural

a) Social capacities

Social capacities were considered one of the most important resilience capacities in my theoretical framework. In general, they are mentioned in both academic and non-academic models. However, they vary in terms of the specific capacities included. Furthermore, any of the models mentions entirely the set of social capacities found in El Morro. I observed a set of seven social capacities, including participation, leadership, cooperation, social capital, trust, sense of community and place attachment. They are the most extensive capacities and I consider them to be the base that supports all other capacities because many of them acted as a *catalyst* for others, including sense of community, cooperation, leadership, place attachment and participation. In terms of the dynamic attributes of social capacities, they were the most variable, flexible and appreciated capacities mentioned by people. Some of them changed radically from one stage of the disaster to another, while others did not experience major changes.

Participation

The first capacity I analyse is participation. As I mentioned in the theoretical framework, this capacity can be observed in the engagement of community members in social organisations and several community activities. In general, participation varied enormously from the pre and post-disaster periods. Regarding social organisations, they were crucial for coping with the event. They helped keep the control and organisation inside the community but more importantly, they constituted formal spaces where the necessities of people were channelled. The capacity of organisations in meeting these needs and solving problems could explain the greater relevance of some organisations over others at every stage of the disaster. For instance, the main necessity during the emergency period was the satisfaction of basic needs. The ‘Neighborhood Council’ became relevant because it was in

charge of organising the external aid. For the same reason, 'Palomitas Blancas' was also significant due to the crucial role that played in the community kitchens. By contrast, 'El Morro Football Club' remained inactive during the emergency as recreation was not a priority at that stage. The 'Fishermen's Union' was more relevant in the reconstruction period because it had to deal with the high rate of unemployment in the community. The role played by social organisations in El Morro coincides with Twigg (1999) and the idea of communities as problem-solving entities in the context of natural disasters.

Problems always have a negative connotation. However, coping successfully with these problems can also become opportunities. As Dynes (2005, p.8) mentions 'If a community faces no problems, if it is not challenged, it cannot grow. Each problem successfully met leaves its residue of sentiments and organisation; without these sentiments and organisation, future problems could not be solved'. It would appear paradoxical that problems can lead to growing. Yet, in my resilience framework, it was possible. The problems successfully solved by community organisations in El Morro can become a positive learning experience that could be useful to face future disasters.

Regarding the DRC typology mentioned in Chapter 3, it was useful to explain the behaviour of some organisations but it was too limited to explain others. Quarantelli (1994, p.13) also coincides with the limitation of this typology. The DRC typology describes the organised behaviour in disasters, identifying four groups: *established*, *expanding*, *extending* and *emergent* organisations (see Chapter 3 for further details). This typology was useful to explain the behaviour of security guards, 'Palomitas Blancas', 'Fishermen Union' and 'El Morro Football Club'. Firstly, security guards can be classified as an *emergent organisation* because it did not exist before the disaster. Secondly, 'Palomitas Blancas' can be clearly classified as an *extending organisation* as it had pre-disaster existence, but it extended their activities by dealing with new disaster tasks. Thirdly, the 'Fishermen Union' can be identified as an *expanding organisation* because it had to undertake additional activities after the

disaster and it also increased in size due to the problems faced by fishermen. Although 'El Morro Football Club' did not perform any task during the emergency, in the reconstruction period it was activated. In this period, it could be classified as an *established organisation* as it performed the same tasks that it would have undertaken in a non-disaster context.

The limitation of the DRC typology was found in the situation of the 'Neighbourhood Council' and 'Los Jinetes del Mar'. Specifically, both organisations could fit into two categories at the same time. On the one hand, 'Los Jinetes del Mar', despite being inactive for more than 40 years can be classified as an *emergent organisation* because it did not exist immediately before the disaster. This organisation performed the same historical tasks that they would have undertaken in a non-disaster context (recreational activities for children). Therefore, it can also be classified as an *established organisation*. The activation of historical organisations after the impact of natural disasters has not been registered in the literature. This would be an interesting area to explore in future studies. On the other hand, the 'Neighbourhood Council' can be classified as an *extended organisation* as it had to deal with new disaster tasks. Nonetheless, the authority structure changed: a woman assumed the leadership for the first time in the history of the organisation. Consequently, it could also be seen as an *emergent organisation*. Yet, as the 'Neighbourhood Council' had previous existence it cannot be classified as it.

Quarantelli (1994, p.13) points out that it is possible to find quasi-emergent behaviour in organisations and El Morro is an example of it. After analysing several DRC studies on emergence, Quarantelli concluded that organised responses to disasters can be visualised as taking one of the following forms (1994, pp.12-13):

1. Established groups carrying out old tasks.
2. Established groups carrying out old tasks but with some degree of minor behavioural emergence.
3. Established groups carrying out new tasks and showing behavioural task emergence.

4. Established groups carrying out old tasks but showing behaviour structural emergence.
5. Extending groups carrying out old tasks but with new structures.
6. Expanding groups carrying out new tasks but with old structures.
7. Emergent groups carrying out new tasks with new structures.

This typology is not suitable to explain what happened in the ‘Neighbourhood Council’. For this reason, I propose a new type of organisation: 8. *Extending groups carrying out new tasks with a new structure*. There is no evidence of this type of organisation in the literature. However, in Chile, this was common. Changes in the authority in pre-existent groups were observed not only in El Morro but also in other communities such as Las Salinas and Tumbes where women assumed leadership in organisations that had been led historically by men. The analysis of the changes in the structure of authority or leadership in organisations after disasters could be a relevant area to explore in future research. The experience of both ‘Los Jinetes del Mar’ and ‘Neighbourhood Council’ could open the debate about the applicability of the DRC typology in the context of developing countries. The experience of El Morro can contribute to extending the well documented DRC typology with the new category proposed in my research.

Regarding community activities, they were useful for promoting a sense of community, union, and cooperation. Community activities were intensified over time due to the presence of external institutions which organised several recreational activities for the community, especially for children. Recreational activities were used as relaxation spaces that helped *Morritos* deal with the tension and mental distress. New activities such as Easter, Children's Day and Mother's Day took place in El Morro. These activities were not part of the traditions of the community and they were theoretically ‘imposed’ by external actors. As a result, these activities did not persist after external institutions left the community. By contrast, historical celebrations such as ‘La Fiesta de San Pedro’ (Saint Peter's festival) continued despite the difficult period faced by fishermen and the mixed feelings towards the

sea. This finding emphasises the relevance of promoting programmes contextualised to local realities to make them more sustainable in the long term.

Participation not only showed different nuances in terms of social organisations and community activities but also in respect of massive demonstrations. Specifically, ‘Don Renato street protest’ became a milestone for the community, as a demonstration like this had not occurred in more than 30 years. The entire community was mobilised when the demands of the community were not answered by authorities. This protest showed the strength of participation in the community when it comes to defending the interest of collective wellbeing.

As a conclusion, the Chilean disaster impacted the participation patterns in El Morro. The functioning and structure of organisations changed and new community activities that were useful for coping with and recovering from the disaster took place. On the one hand, street demonstrations were a new way to channel the demands of people and empower the community. On the other hand, participation was a *catalyst*, especially in the reconstruction period. It promoted other capacities, including leadership, sense of community, cooperation and bonding social capital. It was also relevant for activating physical resources such as local infrastructure, especially housing. It also promoted cultural capacities such as traditions. By contrast, there were also external factors that negatively affected participation, including the top-down approach, lack of coordination amongst institutions, lack of knowledge of local reality and misleading information. Although the observations of El Morro could validate the relevance of participation for coping with and recovering from disasters, further research is needed.

Leadership

Participation was intrinsically linked to leadership in El Morro. Community leaders were essential at all stages of the disaster. They encouraged participation, they

guided community activities and they were the main interlocutor between the government and community interests. Leadership acted as a *catalyst* in the winter emergency which contributed to activating resources such as social capital, cooperation, participation and sense of community. Essentially, community leaders had to solve several community problems and develop strategies to cope with the crisis. As it happened in the earthquakes in Kobe, Japan and Gujarat, India (Nakagawa and Shaw, 2004, p.5), leaders in El Morro were crucial for the recovery and facilitated collective decision-making, especially in the process of demanding permanent housing.

The emergence of new leaders was one of the main findings in El Morro. The role of Cecilia Vallejos, the first female leader of the community, became a turning point in the history of El Morro. There are three relevant points worth mentioning about the emergent leadership of Cecilia. The first one is related to the style of leadership observed at the different stages of the disaster. During the immediate and winter emergency periods, she used an authoritarian leadership. This style was characterised by the control and discipline applied and the total authority over decision-making. This style of leadership was useful for managing efficiently the emergency because people needed quick actions and solutions that could not be provided by Don Alonso, the historical leader. There was little time for discussion, and actions such as the distribution of aid, needed to be completed with great urgency. Cecilia was able to make quick decisions which gave a sense of order in the midst of chaos. Nevertheless, this leadership style was no longer suitable for the reconstruction period. Once the emergency was over; a democratic leadership took place.

The permanent housing demand was the main problem during the reconstruction. In order to solve this problem, Cecilia involved the whole community in the decision-making process which increased the engagement of people. Community meetings were the spaces where decisions were taken, and a democratic voting system was implemented to ensure fair representation. Although a democratic system operating

inside the community, this was not respected by authorities who imposed their ideas, especially in terms of the design of permanent housing. This negatively affected the trust towards Cecilia Vallejos and other community leaders. The transition from an authoritarian leadership to a democratic one after the impact of a disaster has not been registered in other disaster contexts. This could be an interesting area to explore in future studies.

The second relevant point is the personal and social skills of Cecilia Vallejos. As I mentioned in the theoretical framework, evidence about the characteristics of leaders in disaster contexts is scarce. In Cecilia, task-oriented social competencies were observed such as problem-solving skills, determination, efficiency, networking skills, ability to delegate, communication skills, coordination and proactivity. Furthermore, personal skills such as empathy, confidence, commitment, positive attitude, kindness, and solidarity were emphasised by *Morrinos*. These personal skills show a more human and caring approach of leadership (Ganapati, 2012, p.423). The same author mentions that this approach can be relevant for building programmes in disaster-stricken communities. It is interesting to observe that despite Cecilia's lack of formal leadership experience before the disaster, she was able to manage properly the crisis. The inexperience of Cecilia does not differ from the leadership observed in other communities in Talcahuano region, such as Las Salinas, Tumbes and Lomas de Santa Clara. Future work could involve the analyses of emergent leadership in other countries or in different types of disasters. It could also be relevant to research more deeply the characteristics of emergent leaders in order to find common patterns in their qualities and strategies implemented.

The third point alludes to the physical proximity of Cecilia, a relevant factor that contributed to validating her leadership. This factor has been mentioned before by Hannah et al. (2009, p.906) who suggest that the impact of leadership styles and behaviours on followers may vary to the degree that leaders and followers are physically separated from one another. In El Morro, the physical proximity

contributed to strengthening the bonds between Cecilia and the community. By contrast, the bonds between Don Alonso and the community were deteriorated because he moved to another community after the disaster. Yet, the same author states that the nature of relationships built prior to an extreme event, such as cohesion and trust, may be more important than physical distance in promoting effective leadership (Hannah et al., 2009, p.906). This was also observed in El Morro, physical proximity was not enough to promote an effective leadership. The social and personal skills of Cecilia which promoted positive relationships with the community were also necessary.

To conclude, leadership was an essential resource to cope with and recover from the disaster in El Morro. The three points analysed previously could be the roadmap to address future research on leadership in natural disasters contexts. Future analysis could be facilitated if the factors that affected leadership would be considered. The changes experienced in leadership in El Morro were the result of the impact of enabling and hindering factors. On the one hand, the main hindering factors were the top-down approach, lack of knowledge of local reality and misleading information. On the other hand, the enabling factor that contributed to strengthening Cecilia's leadership was the permanent support from the local government which validated the leadership of Cecilia in Talcahuano. Although there is no evidence of these factors in other disaster contexts it could be relevant to observe them in future studies.

Gender and leadership

Leadership in El Morro had different nuances. Cecilia's leadership was unique, her power rose and fell over the course of the disaster, gaining and losing social capital. At the beginning, Cecilia was widely supported by *Morritos*, nevertheless, during the recovery period, she became the target of criticism and violence. Traditional gender roles and norms in El Morro restricted the capacities of women and, more

deeply, the empowerment of Cecilia. Inequality, discrimination and violence against Cecilia put into evidence the *dark side* of resilience.

The introduction of gender into disaster relief has been set up as a priority for international agencies. The Sendai Framework for Action clearly states that women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies (UNISDR, 2015). Therefore, empowering women for preparedness is a key role for stakeholders. The incorporation of gender into disaster risk reduction policies lies in the fact that women are more vulnerable to natural hazards than men (Dhungel and Ojha, 2012; Drolet et al, 2015; Horton, 2012). In countries where gender discrimination is tolerated, the percentage of women and girls who die is higher than in other countries. Furthermore, the incidence of gender-based violence -including rape, human trafficking and domestic abuse- also increase during and after disasters (UNDP, 2010). Research evidence from the 2010 Haiti earthquake has shown that gender inequalities persist and may even intensify following a disaster (Horton, 2012, p.306). Similar results were also observed in Nepal flood-prone areas (Dhungel and Ojha, 2012). The vulnerability of women is exacerbated even more as a consequence of their political exclusion and limited opportunity to participate in the decision-making process. During a disaster, women's needs are often overlooked which make them more vulnerable (Dhungel and Ojha, 2012; Drolet et al, 2015; Horton, 2012).

In El Morro, gender issues were palpable before, during and after the disaster. Power relations defined the course of the emergency and recovery periods. As I explained throughout my thesis, in El Morro prevailed a patriarchal regime which was observed clearly in the roles that spontaneously women and men assumed during the immediate emergency period. Men were in charge of rescuing operations and searching for food and water, while women assumed the traditional caretaking roles. A similar pattern has been found in other disasters contexts. For instance, women affected by the flooding in the Bodin district of Sindh in Pakistan were primary

carers, providing food and basic medical care to children and adults (Drolet et al, 2015, p.439). Despite the crucial role played by women in the immediate emergency, women's roles as caretakers remain invisible and undervalued while men receive recognition for their roles in search and rescue and reconstruction (Horton, p.299).

During the winter emergency and reconstruction periods, my research revealed a radical shift in the traditional gender roles and norms. Women, for the first time in the history of El Morro, were responsible for the organisation of the entire community. Cecilia was selected as the first female leader in the Neighbourhood Council and 'Palomitas Blancas' became one of the most important organisations in the community. The implementation of community kitchens was the space for women's empowerment during the winter emergency period. Cecilia gained bonding social capital as the relationship with her neighbours, friends and 'Palomitas Blancas' was strengthened. In the reconstruction period, Cecilia gained linking social capital which was reinforced by the constant interactions with external institutions and political actors to manage the demands for permanent houses.

The building of social capital and empowerment of women in time of disasters have also been found in other contexts. One study conducted in a migrant farm-worker community affected by a series of hurricanes in Volusia County in Florida, USA revealed that a small group of women spontaneously organised as 'Alianza de Mujeres Activas' (AMA; Alliance of Active Women) in response to the lack of help more than 48 hours after the hurricane. The women of this organisation provided support to the community which had been overlooked by the emergency institutions. The findings highlight how AMA promoted a sense of unity within the community, including building bonds of trust with outside agencies (Drolet et al, 2015, pp. 442-443)

Notwithstanding the empowerment of women in El Morro, the resilience capacity and social capital gained by women were lost over the course of the disaster.

Traditional gender relations re-established itself at the end of the reconstruction period. Cecilia's power decreased and her bonding and linking social capital were deteriorated. She was criticised and intimidated by men as a consequence of the delays in the reconstruction. Patriarchal relations imposed despite the democratic election of Cecilia as the president of the Neighbourhood Council. She became the vice-president while the historical male leader of the organisation remained president, despite not having got the majority of votes. The changes experienced in Cecilia's leadership reveal the variable and dynamic nature of resilience and the power of transformation of communities. As I explained in the new principles of community resilience at the beginning of this chapter, communities do not always are built back better, sometimes return to the same state of vulnerability existing before the disaster. The violence against Cecilia showed clearly how the same gender exclusion observed before the disaster, prevailed after it.

Cecilia's leadership and the empowerment of 'Palomitas Blancas' in El Morro show that disasters can be an opportunity for building resilience and promoting social capital. The physical and social disruption of disasters may destabilise processes of reproduction of gender roles. The unavailability of men and urgency of survival-linked tasks may facilitate opportunities for women to challenge and transgress traditional gender roles and norms (Horton, 2012, p.302). Furthermore, disasters also offer opportunities to build bonding and linking social capital. This finding can be useful for policy makers who can take advantage of the unique opportunity that disasters offer to break the cycle of gender exclusion in the long term. Women's knowledge, agency, and collective action must be fully recognised and supported to build resilience, reduce disaster risks, and contribute to sustainable development (Drolet et al, 2015, p.446)

Trust

During the immediate emergency, trust was crucial for the survival of the entire community, especially during the evacuation. People trusted in the knowledge of fishermen rather than the mistaken tsunami alarm raised by authorities. Trust also contributed to collaborating and supporting each other both emotionally and materially. Although trust decreased during the winter emergency and reconstruction periods, it was relevant to keep the sense of community alive and to demand the building of housing in the same place.

The Chilean disaster impacted the trust in El Morro which agrees with other studies that have also shown the significant influence of natural disasters on trust (Dussaillant and Guzman, 2014; Fleming et al., 2014; Toya and Skidmore, 2014; Veszteg et al., 2015). Although some researchers have pointed out that trust increases after the disasters (Cassar et al., 2011; Toya and Skidmore, 2014), the El Morro case study revealed that it can also decrease. Furthermore, it shows that trust varies greatly over time, and this variation depends on the person. Trust varied amongst neighbours and towards political authorities and community leaders.

Firstly, amongst neighbours, I observed that trust was high before the disaster and during the immediate emergency. However, after this period, it decreased. I propose that the factors that can explain the high level of social trust are the tight bonding social capital prevalent before the disaster. These findings correspond with the situation of Mano in the face of the 1995 Kobe earthquake in Japan. Mano is similar to El Morro in the sense that it is a small neighbourhood that coped with and recovered positively from the disaster. Mano also had a considerable amount of trust among neighbours originating from strong bonding bonds and social interaction in community activities (Nakagawa and Shaw, 2004, p.19). Apart from the nature of social capital, the sense of community and the common history are other factors that increased the level of trust in El Morro. Cooperation, observed especially during the immediate emergency, also positively contributed to trust. This finding is

compatible with the positive relationship between mutual help and trust reported by Cassar et al. (2011, p.1).

Regarding the decrease of trust amongst neighbours, excessive aid, disputes to obtain resources and looting, were identified as the main external factors that damaged trust in El Morro. First, there is a consensus that competition generally arises because of the scarcity of resources (Fleming et al., 2014, p.1483). Nevertheless, El Morro showed something completely different, the rivalry emerged because of the abundance of resources received during the emergency (excessive external aid). There is no evidence of similar finding in other disaster contexts. Second, looting was an ethical issue that emerged during the emergency. In Talcahuano region, several businesses were looted or damaged and some *Morritos* took part of it. They used it as a survival strategy, although some people considered it as a 'theft' which affected the trust.

Secondly, as regards to trust towards community leaders, El Morro demonstrated that it decreased considerably over time. There were two specific factors that affected it: external aid and misleading information. During the winter emergency period, community leaders had to allocate the massive amount of resources without previous experience. They were judged, according to the criteria used in distributing aid. These criteria were considered unfair and unequal for some people. A similar finding was observed in Thailand after the 2004 tsunami where some villagers became mistrustful because they viewed aid distribution to be allocated based on political patronage by leaders rather than need and fairness (Berke et al., 2008, p.310). Other communities in Talcahuano, such as Las Salinas, Tumbes and Lomas de Santa Clara perceived the same. The information asymmetries mentioned by Fleming et al. (2014, p.1483) was also observed in El Morro but it took specific characteristics. The misleading information provided by political authorities about the deadlines of the reconstruction negatively affected the trust towards community leaders.

Thirdly, in relation to political authorities, misleading information was the main factor of distrust. Other authors have also identified this factor (Berke et al., 2008; Dussailant and Guzman, 2014). Although El Morro opened up its boundaries after the disaster and interactions with politicians increased, the delays in the reconstruction had a negative impact on the legitimacy of political actors. This is not far from what happened in other communities. In Talcahuano region, communities affected by natural disasters experienced the same feelings towards political authorities, including Las Salinas, Tumbes, Los Cerros and Lomas de Santa Clara.

As a conclusion, trust played a crucial role in El Morro, especially during the immediate emergency period as it contributed to the survival of the entire community. However, it was one of the capacities that experienced the major negative impact or *decay* after the disaster. Although there is not enough evidence to contrast the nuances of trust observed in El Morro, the elements analysed in my research can promote a better understanding of this capacity in the context of developing countries and small-scale communities.

Social capital

Trust was intrinsically related to social capital. As I mentioned earlier, trust was different depending on the quality of the relationship with actors, including neighbours, community leaders and political authorities. Social capital in El Morro was one of the capacities that experienced the major change after the disaster. Variations in the social capital after the impact of disasters have been explored previously by Dynes (2006). In El Morro, the nature and quality of relationships changed radically before and after the disaster. Before the event, El Morro was a closed community; internal social networks prevailed over external ones. Bonding social capital was predominant. This type of social capital was helpful to promote a sense of community, trust and cooperation among neighbours. Nevertheless, after the disaster, a major change occurred. El Morro had to open its boundaries to receive

aid and to start the recovery process. Bridging and linking social capital were present for the first time in the community.

Depending on the stage of the disaster, different types of social capital were relevant. During the immediate emergency, the bonding social capital was crucial. In the winter emergency and reconstruction periods, bridging and linking social capital were relevant but also bonding. Hawkins and Maurer (2010) found similar results after the Hurricane Katrina, bonding social capital was important for immediate support, but bridging and linking social capital offered pathways to longer term survival and wider neighbourhood and community revitalisation. This also coincides with Bhandari (2014) in the context of the 1934 Nepal earthquake. Similarly, this finding was observed in the context of other communities in Talcahuano, including Las Salinas and Lomas de Santa Clara. Although El Morro case study coincides with these results, it also provides evidence that bonding social capital was relevant at all stages of the disaster, not only in the emergency.

The role of bonding social capital was crucial in the emergency period. People relied on their strong family ties to evacuate, to rescue neighbours, to organise community kitchens, security guards and to provide mutual emotional support. In order to understand the activation of bonding social capital in El Morro, it is important to clarify the difference between family and non-family ties. Bonding social capital includes horizontal relationships amongst the members of a network who are similar such as family, friends and neighbours. Nevertheless, in El Morro, the boundaries amongst these members are diffuse. Due to the unique social structure and history of El Morro, it can be found that family ties also constitute non-family ties. As I explained in Chapter 5, most people in El Morro are relatives or share some bonds of kinship. They also live in the same place, therefore, they are neighbours. Those *Morritos* who are not relatives, they are still considered friends and neighbours. Due to the common history and strong sense of belonging, *Morritos* identify themselves as a 'big family', regardless of having bonds of kinship or not.

Consequently, it is difficult to clarify the difference between family and non-family ties as they overlap.

The value of bonding social capital during the emergency has been identified by several authors (Aldrich and Meyer, 2015; Bhandari, 2014; Chamlee-Wright and Storr, 2011; Dynes, 2005; Hawkins and Maurer, 2010; Murphy, 2007; Shaw and Goda, 2004). For instance, in the context of the Kobe earthquake in Japan, neighbours saved most of the victims (Nakagawa and Shaw, 2004, p.12). Likewise, in the 2000 water-borne disaster in Walkerton, Ontario, people reported that they relied mostly on strong ties of family and friends for support during the emergency (Murphy, 2007, p.309). In the reconstruction period, El Morro revealed that bonding social capital was crucial to empower the community and demand the building of permanent housing in the same land. This was a unique case in Talcahuano as other communities such as Las Salinas and Lomas de Santa Clara, which did not have strong bonding social capital before the disaster, were relocated to other areas in the city.

Bridging and linking social capital were crucial for the winter emergency and reconstruction periods. On the one hand, during the winter emergency, bridging social capital - relationships amongst people who are different-, especially loose friendships, famous people (e.g., actors, football players and singers), religious organisations, schools and universities were used to provide food, emergency supplies and emotional support through recreational activities and psychological interventions. On the other hand, linking social capital -vertical relationships with institutions and individuals who have relative power over them- were observed in the relationship with political authorities, including the mayor, city councillors, members of parliament and senators. The relationship with these authorities was relevant for the reconstruction of permanent housing and to solve the unemployment problem in the community. The advantages of using both bridging and linking social capital coincide with Hawkins and Maurer (2010). Specifically, the authors mention that bridging and linking social capital are useful for providing and sharing

information, resources, supplies and food. Nevertheless, while bridging social capital was relevant to solve short-term problems such as food, linking social capital was useful for solving long-term issues in the community, for instance, housing. The support from both bridging and linking social capital continued during the reconstruction period, but only during the first two years. In the last two years, the presence of bridging and linking social capital diminished considerably. This situation was also observed in other communities in Talcahuano region such Las Salinas, Rocuant, Renacer and Lomas de Santa Clara.

Finally, as it was observed in other capacities, there were also external factors and capacities that positively and negatively affected social capital. Bonding social capital was positively affected by trust, sense of community, cooperation and place attachment. The external factors that negatively impacted social capital were the distribution of temporary housing, the split of the community during the emergency, excessive external aid and looting. Regarding bridging social capital, physical proximity and the participative approach positively contributed to strengthening the bonds while the lack of coordination amongst institutions negatively impacted the relationship. Linking social capital was positively affected by the leadership and cooperation of the community and it was negatively impacted by external factors such as the top-down approach, misleading information and lack of knowledge of the local reality by authorities. It would be interesting to observe the nature of relationships in El Morro in the long term, especially the role of bonding social capital after the reconstruction and the use of bridging and linking social capital to solve future community problems.

Cooperation

Cooperation was another essential capacity found in El Morro that was intrinsically connected to social capital. This capacity was crucial for the survival of people and for keeping the sense of community and union. In general, the disaster positively affected the cooperation in El Morro. The magnitude of the event and the multiple

problems derived from it motivated acts of solidarity not only amongst neighbours but also from external actors. The positive effect of natural disasters on cooperation has been observed also by other scholars, particularly by Minamoto (2010, p.553) in the aftermath of the 2004 tsunami in Sri Lanka.

The positive impact on cooperation was observed in specific activities and strategies carried out mainly during the emergency period in El Morro. The most remarkable activities were the rescue of neighbours, searching for food and water, community kitchens and security guards. *Morrinos* were able to work together for a common benefit: survive. These strategies have also been observed in other contexts, namely, in the 1995 Kobe earthquake in Japan (Nakagawa and Shaw, 2004, p.16) and in San Pedro de la Paz, after the 2010 Chilean earthquake (González-Muzzio, 2013). In other temporary communities in Talcahuano region, similar findings were also noticed, especially in Tumbes and Las Salinas.

Although most studies emphasise acts of solidarity and mutual aid during the emergency, El Morro showed that collaboration also prevailed during the reconstruction period. Collaboration continued despite the loss of trust amongst neighbours caused by looting and competition for resources. Mutual aid was observed in the process of enlarging *mediaguas* and the installation of water and sewer service connections. This reveals how *Morrinos* put the common good ahead of their own personal interests. Therefore, cooperation was not destroyed; on the contrary, it was strengthened after the disaster. In fact, cooperation was the capacity that increased mostly after the disaster, but also it was the less affected by the negative impact of external factors such as excessive external aid and lack of coordination amongst institutions. Cooperation also acted as a *catalyst* for other capacities, especially in the winter emergency period. It promoted the sense of community and bonding ties that were negatively affected in that period.

In summary, El Morro had a record of cooperation before the disaster. Some examples include solidarity in funerals, ‘Palomitas Blancas’ and extinguishing fires.

After the disaster, cooperative actions increased not only internally amongst neighbours but also externally through humanitarian aid. Both were essential for the survival of people. It is important to mention that cooperative actions were spontaneously promoted by people. They were recognised as actions that belong essentially to *Morrinos* in the sense that they were not imposed or suggested by external actors. In other words, cooperative actions emerged naturally in the community, especially community kitchens and security guards. These strategies provided a sense of control and autonomy to *Morrinos* in a chaotic context invaded by external actors.

Sense of community and place attachment

The last social capacities I analyse are the sense of community and place attachment. In the theoretical framework, I mentioned that studies focusing on the role of the sense of community are still missing. El Morro showed that this was a crucial resource for the survival and recovery of the community. The findings in El Morro suggest that not only the sense of community was relevant but also a new resource that I did not consider in my theoretical framework, place attachment. The sense of community and place attachment are usually used interchangeably, however, there is a subtle difference between them. Sense of community refers to an attitude of bonding (trust and belonging) with other members of one's group or locale, including mutual concerns and shared values (Perkins et al., 2002). Place attachment alludes to a more emotional connection, it is the positive cognitive and affective bond that develops between individuals and their environment (Altman and Low, 2012). Therefore, the main difference lies in the connection created. The sense of community is the connection with other members while place attachment is the connection with the geographical place.

In El Morro, both sense of community and place attachment were present at the different stages of the disaster. The sense of community was deteriorated during the winter emergency, due to selfishness and individualism that arose after receiving

excessive humanitarian aid. Place attachment remained intact and, even more, it was strengthened over time, especially during the reconstruction period where it acted as a *catalyst*. During the immediate emergency, sense of community was crucial for the survival of people which was observed in the evacuation process and implementation of survival strategies. People looked after each other and kept a sense of union and collaboration. In this period, sense of community was a *catalyst* for other capacities, especially cooperation and participation.

In the reconstruction phase, place attachment became crucial for demanding the reconstruction of permanent housing in the same place. It is relevant to observe that people still wanted to rebuild the community in the same place, despite that historical relationships were broken and sense of community was worsened. This decision also persisted in spite of the damage caused by the disaster and the risk of living in an area at risk for a tsunami. This is a relevant finding because place attachment seems to be the most important motivator for returning to the same place. This coincides with the study carried out by Chamlee-wright and Storr (2009) in the aftermath of Hurricane Katrina. The study showed that place attachment also motivated people from New Orleans to return and rebuild their communities in the destroyed site. Although the results obtained in El Morro case study also suggest that despite the decline in the sense of community, place attachment can be fortified.

There are several capacities and external factors that positively and negatively affected the sense of community and place attachment. On the one hand, the factors that contributed to strengthening these resources include community celebrations, common economic activity (fishing), connection with natural resources, self-building practice, and strong family bonds. Cultural factors, including languages, traditions, especially 'La Fiesta de San Pedro' (Saint Peter's festival), and values were also relevant. On the other hand, among the external factors that undermined these resources, the most important were: the top-down approach, the distribution of *mediaguas*, the split of the community into two sectors, the excessive external aid, the misleading information, the lack of coordination amongst institutions and

the lack of knowledge of local reality from external actors. Although there is no evidence that can validate the impact of these factors on the sense of community and place attachment, it could be relevant to observe if the same factors are also present in other contexts such as in non-fishing communities and medium or high-income communities.

Finally, although most of the studies do not take into account the role of sense of community and place attachment. El Morro showed that they were crucial for coping with and recovering from the disaster. I consider them to be the core of the social capacities, the main *catalyst* in El Morro because they are intrinsically connected with the majority of other resources. The sense of community and place attachment not only encouraged cooperation, participation and leadership in the community but they also promoted the formation of strong bonding social capital. Furthermore, they motivated actions that defined the future of El Morro. They prevented the resettlement of the community in another place and the negative consequences that would have derived from it. By contrast, other communities in Talcahuano were displaced, such as Lomas de Santa Clara and Las Salinas. Based on interview data, I observed that people from these communities did not have such strong sense of community and place attachment as El Morro. Unlike El Morro, people from Lomas de Santa Clara and Las Salinas accepted the decision of the government of being displaced, they did not put up resistance as El Morro did.

b) New Intangible capacities: Cultural capacities

After analysing the main social capacities, I introduce the new intangible capacities found during my fieldwork: the cultural capacities, including traditions, norms, values, language, beliefs and local knowledge. Data obtained from El Morro indicate that they played a crucial role in dealing with the disaster. Except local knowledge, cultural capacities were not considered in my theoretical framework. Furthermore, very few publications are available in the literature addressing these capacities. From the models that I analysed in Chapter 2, only one model includes

these capacities, particularly Landau's model (2007). Therefore, there is not substantial evidence from other case studies that could validate cultural capacities. El Morro would provide relevant insights into the analysis of these capacities in the context of natural disasters.

Local knowledge

Local knowledge was the most remarkable capacity among all cultural capacities in El Morro. A few studies have addressed local knowledge in the disaster field (e.g., Reichel and Fromming, 2014; Tran et al., 2009) which are limited only to the risk assessment in disaster-prone communities. They focus on assessing risks through the application of participatory methodologies as part of the disaster management process.

Local knowledge can be understood as 'what the residents know about natural hazard risks and what they believe and do about them in a given situation' (Dekens, 2007, p.5). The same author states that we all have local knowledge: it refers to the relationship people develop with their surroundings over time. Local knowledge was the only cultural resource previously considered in my theoretical framework, although it was named 'risk knowledge and assessment'. The name of the resource changed because El Morro showed that the knowledge was beyond the risks. It also involved a deep understanding of other components of the community, such as norms, values and history.

Local knowledge played a crucial role in the survival of people in El Morro. Fishermen's experience and the collective memory of past disasters literally saved the lives of *Morrinos*. Fishermen were able to notice warning signs of the tsunami which encouraged a quick evacuation to the hill. People trusted in their local knowledge rather than the alarm raised mistakenly by authorities. The successful evacuation of El Morro and strategies applied by fishermen validated the local knowledge accumulated over 50 years. Therefore, this is a resource that was

strengthened after the disaster and it is likely that the same knowledge could be used to face future disasters. Furthermore, local knowledge acted as a *catalyst* capacity in the immediate emergency period because activated other resources such as participation, cooperation, bonding social capital, leadership, trust and the use of physical resources such as El Morro hill.

Local knowledge is composed of different knowledge types, practices and beliefs, values, and worldviews (Dekens, 2007). In El Morro I observed beliefs, language, norms and values which are part of the cultural capacities in my model as I show in the following section.

Beliefs

Beliefs were essential not only for the survival of the community but also for the recovery. On the one hand, during the immediate emergency, beliefs were observed in the ‘implicit emergency protocol’ existing in the community before the disaster. The main beliefs can be summarised as: ‘We knew that someday a tsunami will come here’ ‘In case of earthquakes we have to run away to the hill’ ‘We were aware that an earthquake that does not allow you to stand up, will bring a tsunami’ ‘You have to wait many hours after the tsunami; a new wave could come the next day’. These beliefs about the risk of tsunami and how to react were transmitted generation by generation and became what I call a ‘disaster belief system’ validated by the entire community (see Chapter 6 for further details).

On the other hand, during the winter emergency and reconstruction period, I observed other belief system related to the self-perception of the community. In the narratives of *Morrinos*, I noticed that a ‘positive outlook’ was reinforced after the disaster. Optimism and hope for a better future and recovery were emphasised by *Morrinos*, as they said: ‘We are going to overcome this’ ‘We will stand up again’ ‘We will not give up’ ‘We are strong’ ‘We will recover’. The self-perception of El Morro as a ‘strong community’ reflects a system of beliefs that reinforced the

capacity of the community to recover after disasters, namely resilience. I use the term ‘resilience belief system’ to refer to these beliefs. Both ‘disaster belief system’ and ‘resilience belief system’ were relevant for coping with the disaster. Undoubtedly, more research is needed in this area.

Language

Beliefs cannot be sustained without a language that reinforces them. In El Morro, language was relevant to promote a sense of community, place attachment, bonding social capital and local knowledge. During the emergency, fishermen used a special language to refer to the risk of a tsunami. For example, ‘salida de mar’ (referring to the tsunami) was the jargon used for issuing the tsunami warning. This jargon was historically internalised by people and contributed to a more efficient evacuation. Other words usage was related directly to the strong place attachment. The most remarkable were ‘Yo soy *Morrino*’ (referring to the demonym for the people of El Morro), ‘Mi caleta’ (my fishing village) and ‘El Morro is a big family’. Furthermore, people identified enormously with the name of the community. The name ‘Caleta El Morro’ not only reflects the connection with the hill but also with the fishing practice. Therefore, the proposal of changing the name of the community presented by authorities was felt as stealing the identity of the community.

Norms and values

Norms and values are other cultural capacities that played a crucial role in the consolidation of a strong local knowledge in El Morro. The most important value noticed in El Morro was the ‘family’. For *Morrinos*, ‘family’ is the core of the community. This was observed in the strong bonding social capital existing in El Morro. The fact that *Morrinos* consider themselves as a ‘big family’ literally represents the relevance of the family in the lives of *Morrinos*. The respect and appreciation for the ‘family’ defined important practices inside the community such as the self-build tradition and enlarging housing. Furthermore, the value of family

is intrinsically connected with norms, especially implicit norms. For instance, the control of marriage was expected to take place between neighbours. The value of family was relevant to promote not only strong bonding social capital and norms but also it contributed to increasing the trust amongst neighbours.

Local knowledge was crucial for the survival of the community. It contributed to a quick and efficient evacuation that saved the lives of all *Morrinos*. Additional cultural resources, including beliefs, language, norms and values also contributed to promoting local knowledge that has persisted for more than 100 years in the community. Moreover, there were factors that positively and negatively affected these resources. The enabling factors were the proximity to natural resources such as El Morro hill and the sea, a common economic activity (fishing) and the low rate of emigration. The hindering factors were the top-down approach, the lack of knowledge of local reality and the controversial proposal for changing the name of the community.

Traditions

Traditions are other cultural capacities that I found in El Morro. Only very few publications are available in the literature addressing the role of traditions in disaster recovery. According to Bhandari (2014), rituals and social events contribute to the development of trust and play a significant role in building community resilience. In El Morro, traditions such as ‘La Fiesta de San Pedro’ (Saint Peter’s festival) and ‘Solidarity in funerals’ were crucial after the disaster. They contributed to improving the social relationships inside the community after they were deteriorated by the individualism and selfishness in the winter emergency period.

On the one hand, ‘La Fiesta de San Pedro’ (Saint Peter’s festival) was especially relevant during the reconstruction period. This festivity was seen as an ‘act of reconciliation with the sea’ and it marked the beginning of the reconstruction. This event contributed to promoting not only the participation but also it helped recover

the mutual trust, cooperation and sense of community. On the other hand, 'Solidarity in funerals' - the tradition of helping mourners economically and logistically analysed in the pre-disaster period - was enormously appreciated by *Morrinos* because the economic losses caused by the tsunami made impossible for *Morrinos* pay all the costs involved in funerals. This tradition became even more important after the disaster. People were psychologically affected by the tsunami, and therefore, the death of a loved one was felt more intensely. In this context, the emotional support was necessary. *Morrinos* forgot the conflicts emerged during the distribution of aid and provided the support that grievers needed. Similarly, Bhandari (2014, p.320) observed in the context of the 1934 Kathmandu Valley earthquake in Nepal that visiting and comforting disaster victims became extremely important part of the funeral. In general, in El Morro, funerals were crucial for restoring not only the trust and cooperation but also the participation. For example, in the context of funerals the idea of reactivating the 'Los Jinetes del Mar' organisation took place.

'La Fiesta de San Pedro' (Saint Peter festival) and 'Solidarity in funerals' reflect the power of traditions in El Morro. These traditions persisted after the disaster despite the damage caused by the tsunami and the loss of trust amongst neighbours during the winter emergency period. These traditions contributed to improving social relationships, trust, cooperation and participation. Nevertheless, there were external factors that affected positively and negatively these traditions. The hindering factors were the lack of knowledge of local reality and splitting the community into two. The enabling factor was the permanence of the community in the same place which could help preserve these historical traditions.

Conclusions

The objective of this chapter was to design an integrated model of community resilience appropriate for the Chilean context. This model combined the components of my theoretical model and the findings of the El Morro case study in different time periods. The main contribution of this chapter was its all-encompassing nature that allowed me to fully accomplish the purpose of my research and answer my research question.

The empirical evidence of the El Morro case study challenged the theoretical model in several ways and new concepts, components and principles emerged, including the idea of *transformation, learning, catalyst capacities, intra- and inter-relationships, variability* and *contextualisation*. Furthermore, the analysis of external factors was crucial to understanding the role of these components in strengthening and weakening resilience capacities. The analysis of resilience capacities was also useful to understand the nature and dynamic attributes of these capacities, aspects scarcely investigated. Finally, El Morro revealed new resilience capacities, including cultural capacities, place attachment and natural resources. In the next chapter, I present in-depth the main conclusions derived from these findings.

CHAPTER 10

CONCLUSIONS

This chapter is divided into three main sections. In the first section, I summarise the argument of my thesis. In the second section, I address the contributions of my thesis in terms of policy implications. Finally, I discuss the limitations of my study and directions for future research.

10.1. The argument summarised

The main research question guiding my study was: What is the impact of the 2010 Chile earthquake and tsunami on community resilience? In order to answer this question, I analysed the role of community resilience in coping with and recovering from natural disasters in the Chilean context, which was the purpose of my research. Specifically, my thesis examined the resilience capacities and the external factors that impacted upon community resilience which allowed me to develop an integrated model of community resilience.

The impact of the 2010 Chile earthquake and tsunami on community resilience, revealed a number of important findings that can change the way in which communities are seen in the face of natural disasters. The role of community resilience was crucial for the survival and recovery of people in El Morro. A set of diverse resilience capacities were activated to cope with the 2010 event, including social, cultural, economic and physical. Nevertheless, social capacities proved to be the most relevant and effective to deal with the disaster. The intangible nature of resilience was revealed throughout my thesis which can have important implications for disaster management. Communities are not passive victims, they are active agents. This can promote a shift in focus from vulnerability to capacity building. Natural disasters do not only bring losses and physical destruction, they can also open new opportunities to empower communities through the activation of their inherent capacities. External factors should promote capacity building and the

empowerment of communities, however, this is not always the case. External intervention can damage community resilience as El Morro showed. Being aware of the variety of components and interactions of community resilience can contribute to minimising the negative impact of external factors and strengthening community resilience. The following section present these findings and arguments in more detail.

The socially constructed nature of community resilience

The 2010 Chile earthquake and tsunami revealed that community resilience plays a crucial role in coping with and recovering from natural disasters. As I explained in Chapter 9, the disaster impacted upon several resilience capacities, including social, cultural, economic and physical capacities. My research also unveiled that most of the capacities activated to cope with the event has a social and intangible nature such as participation, leadership, cooperation, social capital, trust, sense of community, place attachment and local knowledge. The socially constructed nature of resilience challenges the tendency to overlook the importance of social and cultural resources and to overemphasise physical and economic ones. El Morro owes its survival and recovery mostly to the activation of this type of capacities. Therefore, the use of social resources can be essential to save the lives of people. For instance, in El Morro, the local knowledge of fishermen, sense of community and cooperation allowed a prompt evacuation. If the community had not activated these social capacities, the story of survival of El Morro would have been different.

The use of social capacities can be especially relevant in the case of natural disasters of great magnitude. Although material and financial resources can result in being completely destroyed, social capacities can be activated and even increase when they are utilised. For instance, social capital is usually renewed and enhanced during the emergency period (Dynes, 2005, p.7). Furthermore, social capacities are easily accessible, inexhaustible, free and abundant. These attributes can be especially relevant for planning disaster risk reduction policies in low-income communities. Despite the limited physical and economic resources available in those

communities, they possess unlimited social capacities that can be useful for coping with catastrophic events.

Nevertheless, I do not deny the significant role that tangible or physical capacities play in building community resilience such as basic services, houses, employment and income. Instead, I argue that both social and material resilience are complementary and necessary for coping with and recovering from natural disasters, but promoting intangible resources could increase the potential for resilience in communities. Furthermore, the crucial role of social capacities does not release the government from responsibility for providing the assistance in the form of physical and economic assets. Although El Morro was able to survive during the first five days without external aid, after this period the community required basic emergency supplies such as clothes, medicine and food to face the emergency. Therefore, the socially constructed nature of resilience is necessary but not sufficient to build a sustainable recovery process; material resilience and external intervention are also necessary.

Communities are active agents

Communities have the potential for resilience. Social capacities are inherent to communities. They can remain in a latent state, but they can be activated in response to a disaster. Therefore, disasters can be seen as an ‘opportunity’ to display the inner capacities of communities that as El Morro could ensure the survival of people. As I showed in Chapter 6, El Morro was able to survive during the immediate emergency due to the collective actions that spontaneously emerged in the community. There was no external aid. Therefore, people had to rely on their own resources and capacities.

The activation of social resilience demonstrates that communities can take concrete actions to deal efficiently with disasters. This breaks the traditional paradigm of seeing communities as merely passive victims or recipients of aid. As I argued throughout my thesis, communities are active agents and the El Morro case study corroborated this proposition. *Morrinos* played an active role after the disaster and

they succeeded despite the difficult circumstances. Based on this evidence, I propose changing the paradigm from which communities are conceived in the face of natural disasters: from victims to active agents. This approach can empower people to take action in their communities to face catastrophic situations.

Impact of external factors on community resilience

The 2010 Chile earthquake and tsunami not only impacted on community resilience but also on external factors that either positively or negatively affected resilience capacities. External factors, including economic, physical, social and political factors played a crucial role after the 2010 disaster. They affected the resilience capacities in El Morro, especially in the winter emergency and recovery periods as it could be observed in Chapters 7 and 8. Nonetheless, these factors were more relevant than I expected, they impacted in ways that drastically changed the internal dynamic of the community.

El Morro unveiled the negative side of external interventions and how they can damage the capacity building. The hindering factors in El Morro were mostly political in nature, including top-down approach, lack of coordination among institutions, clumsy distribution of aid and misleading information. The negative effects of hindering factors were especially felt on the social capacities, such as participation, sense of community, social capital, trust and leadership. This provokes a debate about the extent to which external intervention can contribute effectively to the recovery of communities. External factors are necessary for coping with and recovery from disasters but attention should be paid to the impact of these factors on social resilience. El Morro could recover thanks to external aid. Nevertheless, this recovery was mostly material rather than social. El Morro nowadays has high-quality tsunami-resistant housing, basic services and tsunami walls. Nonetheless, El Morro does not have the high level of trust, cooperation and sense of community that it used to have before the disaster, as a consequence of the external intervention. I argue that as little or no attention has been paid to the role of intangible capacities in dealing with natural disasters, the analysis of external factors, especially political ones, could be underestimated.

Variability of resilience

The impact of the 2010 Chile earthquake and tsunami revealed the dynamic and variable attributes of community resilience. Resilience capacities are not static; they change constantly in every stage of the disaster. El Morro showed that the capacities that are useful for the emergency are no longer necessary for the recovery period. Therefore, different capacities are activated at different stages of the disaster, a principle that I called *variability*. This principle suggests the necessity of contextualising resilience-building interventions to the reality of communities not just in a static manner but also over time. The changeable nature of resilience also put into evidence the phenomenon of *emergence* (Dynes, 2005). As I showed in Chapter 9, new capacities that had no pre-disaster existence can be activated. This was clearly observed in El Morro with the emergence of Cecilia's leadership. Emergent capacities can bring substantial changes to the community structure which can cause disorganisation and conflicts.

The variability of resilience also draws attention to the importance of contextualising resilience. Resilience capacities also vary depending on the context. Therefore, a set of capacities can be found in some communities but not in others. This proposition led me to state the principle of *contextualisation*: different capacities for different contexts. Resilience capacities are more likely to be mobilised if they are contextualised to the reality of communities. For instance, local knowledge is a resource deeply rooted in the culture of El Morro. This capacity was activated immediately after the event, saving the lives of people. Respecting the cultural particularities of communities can be a key factor in promoting resilience and ensuring the sustainability of disaster risk reduction programmes. The challenge remains in identifying the specific set of resilience capacities appropriate to a particular context and stage of the disaster.

Resilience is the capacity to transform

Resilience has been considered traditionally as the ability to 'bounce back' and, more recently, some authors have even proposed that resilience is the ability to

‘move forward’ (Manyena et al., 2011). Nevertheless, resilience should not be restricted to any of these terms. Instead, in my thesis, I argued that resilience is the capacity of communities to transform and change in the midst of catastrophes (see Chapter 9 for further details). Communities change at every stage of the disaster. This transformation involves positive and negative changes in resilience capacities. Changes accumulate to the point that the community is no longer the same.

The capacity to transform challenges the guiding principle of ‘building back better’ for disaster risk reduction policies. El Morro showed that although there were capacities improved after the disaster, other capacities stayed the same or even worsened. I affirm that when resilience capacities are improved, a state of *growth* takes place and when they are undermined, *decay* is manifested. Nevertheless, the states of growth and decay are relative. Some capacities can be improved while others can be weakened at the same time. This also can vary depending on the stage of the disaster. In El Morro, some capacities that were strengthened during the emergency were then weakened during the recovery and vice versa. For instance, Cecilia’s leadership was enhanced during the emergency but in the recovery period was undermined. Since growth and decay are not absolute terms, resilience can be understood as the overall balance between the strengthened and weakened capacities. El Morro was partially ‘built back better’ but not completely. This principle should consider the variability and diversity of resilience capacities in order to promote a realistic ‘building back better’. In doing so, the ‘building back better’ would not be a utopia but a fundamental right for disaster-stricken communities.

The dark side of community resilience

The idea of *growth* and *decay* changed my perception of resilience as a ‘pure positive capacity’, as it has been portrayed in the literature. My thesis revealed that there is also a *dark side* of resilience. Resilience also implies losses, failure, and disadvantages in terms of community capacities. As I showed in Chapters 6, 7 and 8, several capacities experienced a state of decay in El Morro, including social and physical capacities such as trust, social capital, houses and employment. There are

factors that can exacerbate this dark side of resilience such as external intervention, misleading information and top-down approach.

External intervention is a crucial factor that can contribute to the triggering of the dark side of resilience. Paradoxically, in Chile, both the lack of intervention and excessive intervention caused conflicts in communities. On the one hand, the lack of external intervention led to looting and crime in the first 48 hours after the disaster. On the other hand, the disorganised intervention and excessive external aid ended with the union and sense of community, giving rise to selfishness and individualism. The competition for resources observed after looting and receiving humanitarian aid shows how the survival instincts can bring an ‘every man for himself’ mentality and, as a consequence, the breakdown of social norms and values. The *dark side* of resilience could have been prevented or at least minimised with a proper external intervention. The government and other external agencies have the responsibility to provide a quick and efficient emergency response to prevent looting and reduce the potential negative impact of external intervention.

Community resilience is a dynamic capacity

The case study findings revealed that resilience occurs in a process where capacities and external factors are interconnected, affecting each other in various ways. The interconnected nature of resilience revealed two main interactions: *intra-relationships* observed among resilience capacities and *inter-relationships* observed between resilience capacities and external factors (see Chapter 9 for further details).

The dynamic aspects of community resilience play a crucial role in mobilising material and social resilience in disaster-stricken communities. Nevertheless, El Morro showed that in the process of activating resilience capacities, social capacities acted as a *catalyst* in activating other capacities. Catalyst capacities, including local knowledge, place attachment, sense of community, cooperation, leadership and participation, are the core of community resilience, the most important capacities that triggered actions towards the survival and recovery of the community. This finding highlights, even more, the relevance of intangible or social capacities in

dealing with natural disasters. My proposition is that all capacities (tangible and intangible) are significant for building resilience. Yet, depending on the stage of the disaster and the context, this means the variability of resilience, certain types of capacities can act as a catalyst for others. Therefore, all resilience capacities have the potential to activate and mobilise others capacities.

Power and trust

My research showed how power and trust can be impacted by natural disasters. Power and trust flow over time, in a continuous relationship of growth and decay. In El Morro, power relations were observed in the intra-relationships and inter-relationships which affected not only trust but also social capital. In the intra-relationships, power relations were clearly observed in Cecilia's leadership. As I explained in Chapter 6, during the emergency period, Cecilia gained power in the organisation of community kitchens. This allowed her to strengthen her bonding social capital with the community and, consequently, trust towards her also increased. Nevertheless, this situation was reversed in the recovery period, Cecilia lost her power and the patriarchal regime re-established again. As a result, trust towards her was negatively affected, losing bonding social capital. In the inter-relationships, power relations were observed in the top-down approach of external agencies and misleading information from the government regarding the deadlines of the reconstruction. This undermined trust in government and politicians and, consequently, linking networks were damaged. External agencies were reluctant to use a bottom-up approach which was detrimental for intangible capacities.

Power and trust are the best examples of the variability of community resilience. The consciousness of the variability of power relations in disaster events can prevent the negative consequences in community resilience. Gendered oppression and unequal power relations can damage the capacity building. Adopting a bottom-up approach can benefit both communities and agencies. This approach could lead to an increase in community self-efficacy and empowerment that could speed recovery. Furthermore, a top-down approach could promote the sustainability of governmental initiatives (Spokane et al., 2013). El Morro showed that disasters can

be an opportunity to empower people but also to disempower them. The impact of power relations in disaster-stricken communities should be fully recognised in order to promote sustainable mechanisms for promoting resilience and preventing inequality in vulnerable communities.

What is the impact of the 2010 Chile earthquake and tsunami on community resilience?

The impact of the 2010 Chile earthquake and tsunami on community resilience as well as the main components and interactions, including capacities and external factors, can be summarised in the integrated model of community resilience (See Chapter 9 for further details) which answers my research question. This model can be understood as follows (see figure 10.1):

The model starts when a *disaster* occurs; this can vary in severity, duration and surprise (Norris et al., 2008, p.130). The disaster impacts the pre-disaster resilience of communities, namely, the *capacities* to cope with the event that can be in a latent state. These capacities can be *tangible* (social and cultural) or *intangible* (physical and economic). *Intra-relationships* occur among these capacities and some of them can act as a *catalyst* for others. Furthermore, *inter-relationships* occur when *external factors* impact resilience capacities. These capacities can be undermined or enhanced by the impact of external factors, including economic, physical, social and political factors. These external factors can act as *hindering*, *enabling* or *mixed factors*. These factors can improve or weaken these capacities. When these capacities are improved after the disaster, a state of *growth* takes place which represents the *positive side* of resilience. On the contrary, if these capacities are undermined after the event, a *decay* is manifested which represents the *dark side* of resilience. The greater the capacities strengthened after the disaster the greater the resilience. In contrast, the greater the capacities undermined after the event, the lesser the resilience. The outcome of the resilience is *transformation*, as a result of the variations in the capacities. Resilience varies depending on the context, time and

power-trust relationships. Changes accumulate to the point that the community is no longer the same. The process of transformation leads to *learning* from disaster experience which includes both learning from *success* and *failure*.

Finally, the incorporation of the several components and interactions in my model allowed me to develop further my initial definition of community resilience presented in Chapter 2. I propose that community resilience is **‘the capacity of communities to cope with and recover from disasters, learning from such stress, activating their latent resources and transforming in the face of adversity’**.

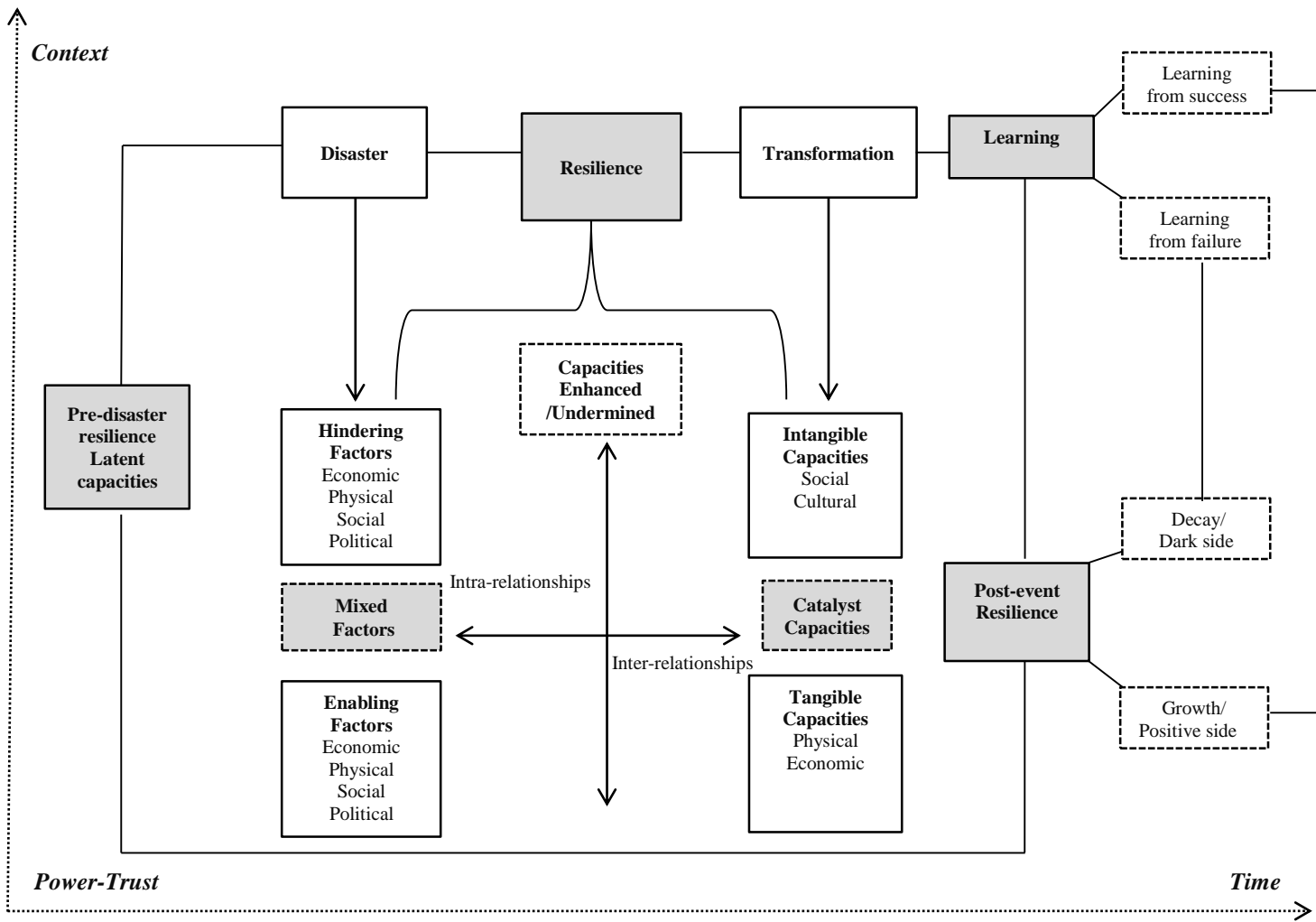


Figure 10.1. Integrated model of community resilience

10.2. Policy implications

Apart from the theoretical implications of my research presented in the previous section, the findings also provide original evidence that could inform policy makers, emergency planners, practitioners, and communities when it comes to facing natural disasters. The recommendations and policy implications presented in this section are based mainly on the integrated model of community resilience developed in Chapter 9, more specifically, on the analysis of capacities and external factors that positively and negatively impacted upon community resilience in El Morro.

El Morro showed the importance of both intangible and tangible capacities during the emergency and recovery periods. In this section, I focus mainly on socio-cultural capacities, the called *intangible capacities* because they were crucial for the survival of El Morro and they are not very well considered in the existing literature and practice. I suggest that in formulating disaster risk reduction policies and programmes, these intangible capacities should be considered. I propose that policies should address the ‘what, how and why’ of these capacities. This means, identifying *what* are the capacities needed to deal with disasters, analysing *how* they are activated and *why* they are important. Such a policy framework could be termed ‘Capacity-based approach for building community resilience’. I maintain that applying this approach has three main advantages. First, using intangible resources is cost-effective. They are free, easily accessible, inexhaustible and abundant. Second, it could empower communities. Recognising the internal assets of communities can contribute to promoting an active role of communities in coping with natural disasters and increase their control in crisis situations. Consequently, this could counteract the negative impact of hindering factors. Third, a capacity-based approach could promote partnerships between communities, NGOs, public and private sectors. As a result, this could lead to the promotion of a paradigm shift from a victim approach to an active agent one. In other words, communities could be seen as ‘actors’ or ‘agents of change’ in the process of building resilience rather than merely ‘recipients of aid’.

In order to put the capacity-based approach into practice, I propose three important steps for policy makers and emergency planners to take into consideration: identification, mobilisation and monitoring and evaluation of capacities. I also propose practical ways in which resilience capacities can be promoted. In addition, I suggest that a participative approach should be promoted in any action for building resilience. El Morro showed that a top-down approach was detrimental to the community and demonstrated the necessity for contextualised initiatives.

First, regarding the identification of capacities, in Chapter 9, I showed the importance of the appraisal of capacities, so recognising these capacities is the first step. I proposed that there are communities that are more aware of their capacities than others. Therefore, in the case of those who are not aware of their inner capacities, the role of external agents is to help communities identify them. For example, this could be done through participative workshops carried out in a community setting. These workshops should include the different stakeholders implied in building community resilience including private and public sectors and local communities.

In the participative workshops, I propose the use of the community mapping technique. This technique ‘enables communities to map details of where they live and the surrounding infrastructure. It is a way of empowering communities to take action for themselves. It also encourages the community to consider what it can achieve for itself, before seeking assistance elsewhere’ (WaterAid, 2005, p.2). I suggest that this map should be orientated to identify the resilience capacities inside of the community. This could be done at two levels: the community and municipal level. On the one hand, at the municipal level, I propose that each municipality could create a map of resilience capacities or resilience map. This map could be similar to disaster risk maps but instead of showing the magnitude and nature of risks, the resilience map could show the capacities of communities to cope with and recover from disasters. I argue that a resilience map could promote a prompt and effective response to disasters, especially in the case of major disasters where institutions collapsed, as happened with Talcahuano city council. I suggest that public officials

and practitioners should have trust in these resilience maps and make use of the resources and capacities already available in communities.

At the community level, I suggest the creation of small-scale maps developed with and for people. This could be useful not only for external agents but also for community leaders, and citizens more generally, who can use these maps to identify their own capacities to cope with disasters. I suggest that in order to make municipal and city resilience maps accessible and visible to different stakeholders, particular methods can be used. For example, putting the maps up on the wall of community centres for people to see, and publishing in different social media, such as Facebook, Twitter, blogs and official websites of private and public institutions.

After identifying resilience capacities, as a second stage, I propose the mobilisation of capacities. I argue that mobilising means activating and strengthening inner resilience capacities. Nevertheless, I also maintain that special attention should be paid to undermined factors in order to reduce them; otherwise, any effort to promote capacities could be wasted. Conversely, enabling factors should be promoted and replicated in future interventions. As the development of a model of community resilience in my research contributed to identifying the capacities that were strengthened and undermined by external factors, I propose that designing participative models of resilience at municipal and community levels could contribute to mobilising and strengthening capacities and reduce the impact of undermined factors.

From the variety of capacities and external factors observed in El Morro, a series of policy recommendations can be derived. Although I cannot provide a comprehensive set of recommendations, as this is beyond the scope of my thesis, I can still provide general guidelines about the most relevant capacities and external factors identified in El Morro. Specifically, my recommendations address the *catalyst capacities*, which include local knowledge, sense of community, place attachment, cooperation, leadership, and participation. The main hindering factors that affected these capacities were a top-down approach and a lack of knowledge of local reality. Therefore, I suggest the promotion of a bottom-up approach in any

action carried out by external agents, recognising the power of communities to cope with disasters. This could be done through the implementation of the following strategies.

In relation to local knowledge and cooperation, El Morro showed that the community had an ‘implicit protocol of emergency’, orally transmitted from generation to generation. I propose that these protocols could be made more visible and tangible through initiatives such as publishing a book on the historical memory of the community. Furthermore, building participatory monuments to commemorate the achievements of survival and recovery could also contribute to preserving collective memory. Cooperative strategies such as the self-evacuation, community kitchens and security guards could be integrated in both the book on historical memory and in the building of monuments.

In terms of planning, I propose that emergency plans should not only be elaborated at the city level, but also at the community level. The experience in Talcahuano and other regions in Chile showed that general emergency plans at the city level were not effective in the face of the 2010 disaster. This happened mainly because people from local communities were not aware of the existence of these plans. I propose that designing community emergency plans could enable a more effective response to disasters. I also suggest that these plans should be elaborated using participative methods so the sustainability for future generations can be ensured. Furthermore, as the ability to learn from disaster experience is intrinsically related to local knowledge, I propose that *learning from success* and *failure* should be registered. For instance, municipalities could elaborate manuals of both good and bad practices as well as the lessons learnt from the disaster. This could promote exchanges and mutual learning among different stakeholders, especially communities. For instance, those communities that did not perform very well after the disaster can benefit from the experience of those who perform better.

In order to promote place attachment, I propose to consider technical and socio-cultural variables in the building and allocation of emergency and permanent houses. For instance, I propose including the workforce available in communities

and the respect of previous family networks in the allocation of houses. In order to strengthen the sense of community, I suggest developing more tangible initiatives, such as creating participatory community murals alluding to collective actions and cooperation.

Leadership and participation were the capacities most negatively affected by external factors, especially by the top-down approach, misleading information, lack of coordination amongst institutions and excessive external aid. I suggest that policy makers and emergency planners should develop national and local mechanisms to improve coordination among different stakeholders in disaster situations. This could improve the channels of communication and information between communities and external agents. Having the permanent support from a municipal officer in El Morro was an enabling factor that contributed not only to improving coordination among several institutions but also to improving the relationship between the community and local government. This is an initiative that could be replicated in other scenarios. Yet, I suggest that it should be extended only for a limited period of time because prolonging it for several months could cause dependency as it was observed in El Morro. Furthermore, although leaders in El Morro showed to have natural skills to deal with the disaster, they lacked skills to distribute efficiently resources which caused several internal conflicts in the community. I suggest that in order to promote effective leadership, providing resource management training to community leaders could be a practical strategy to consider in disaster planning.

Finally, regarding monitoring and evaluation of capacities, El Morro revealed that capacities and resources changed over time. Therefore, monitoring the variations in these capacities is essential. I propose that any disaster risk reduction policy or programme could be evaluated using a capacity-based approach. This could improve the efficiency and effectiveness of these programmes in future. Nevertheless, private and public organisations could be reluctant to evaluate because of the involved time and cost. For this reason, I propose the creation of a resilience self-assessment tool for general use, designed participatively with the community.

With this tool, communities can independently monitor and evaluate their capacities at any time, regardless of external support.

1.3. Limitations and directions for future research

Methodological considerations

The nature and purpose of my research justified the selection of a *unique case*, but this led to some limitations in terms of external validity. Nevertheless, I argued that my research is generalisable to theoretical propositions and not necessarily to the specifics of other contexts. Despite this fact, I suggest that future research could involve multiple-case designs in order to observe if similar results can be found in other communities and in other countries. Using a multiple-case study could contribute not only to increasing external validity but also to testing one of the main principles of resilience observed in my study, the principle of *variability*. For instance, it would be interesting to observe what kind of capacities change depending on the context. For example, comparing urban and rural communities, high and low-income communities, developed and developing countries, and new and old communities. Comparisons could also focus on other variables, such as type and magnitude of natural disasters.

Related to the principle of *variability*, my study showed the importance of observing resilience capacities over time because they can change from one stage of the disaster to another. I suggest that conducting longitudinal studies rather than cross-sectional ones could be more suitable for research in this area. Due to constraints of time and resources, I could not carry out a longitudinal study *per se*. Yet, I was still able to do a longitudinal analysis using social media and digital documentation as data collection methods. The use of Facebook, YouTube, and digital newspaper archives allowed me to gather information about the pre-disaster and emergency periods, data that was not available in physical form due to the massive destruction caused by the tsunami. Consequently, I suggest that future research could consider

the role of social media not only as data collection methods but also as a strategy for building resilience.

In my thesis, I argued for the importance of contextualising community resilience and the crucial role that citizens play in building resilience. My initial plan was to conduct participative workshops at the end of my fieldwork in order to validate my data with the community. However, the impact of a new earthquake in the north of Chile, in the same week that I was expecting to hold these workshops, changed the course of my plan. Instead, I decided to see this new scenario as an opportunity to observe *in situ* the reaction of people to this new disaster context which provided useful (and more sensitive) means to test my main propositions. Despite this fact, I suggest that future research could consider the use of participative techniques, such as participatory mapping and workshops, in order to involve community members in the research process. Participation action research (PAR) could be an interesting approach to explore in future studies (McIntyre, 2008)

Theoretical considerations

My research discovered only very limited scholarship and empirical evidence on community resilience in Chile and, indeed, in any other developing countries. Consequently, I had to rely on very few studies, which had been carried out in Asia and in developed countries such as Japan and the United States, which may have limitations in terms of their applicability to the reality of Chile. Since developing countries are more prone to natural disasters than developed ones, I suggest that further research in developing countries is necessary in order to extend the knowledge of resilience in this context.

Despite the new insights provided by my research on community resilience, there are still unanswered questions, specifically whether resilience is an outcome or a process and how to measure resilience at different levels. In my research, I did not

concentrate on the first question because I argued that the focus of the discussion should be on the observable components of resilience, namely, the capacities of communities to cope with and recover from disasters. Regarding the second question, my research was limited to a micro-scale community. Nevertheless, I suggest that further research could consider how to measure resilience at other levels as well, including individual, city and country level. As a final point, the El Morro case study also opens up new avenues for future research in other areas that were mentioned in my study but that were not explored deeply (falling outside the main scope of my research). Specifically, gender issues and ethical dilemmas in natural disasters could be emerging areas of study. Furthermore, other capacities such as community competence, empowerment, creativity, flexibility and critical reflexion were implicitly mentioned in the analysis of social capacities. Future research could focus more explicitly and deeply upon them.

In this chapter, I have summarised the main argument of my thesis and the theoretical contributions of my research. Furthermore, I presented the main policy implications, limitations, and directions for further research. My research has revealed important evidence about the role of community resilience in the natural disasters field. My findings not also challenged the main theoretical propositions existing in the field but also provided new insights into understanding community resilience. My thesis has also contributed methodologically to the field of community resilience through the use of a single-case design in a small-scale community. The theoretical and practical implications of my research could be useful for many actors, including practitioners, academics, policy makers and especially, communities affected by natural disasters. My research showed the power of communities in coping with and recovering from natural disasters. Communities have the strengths and capacities to deal with disasters. They are not victims, they are active agents. The resilience capacities identified in El Morro and the integrated model of community resilience can become a useful operational tool for managing efficiently emergency situations and planning sustainable disaster risk reduction policies in developing countries.

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APPENDICES

Appendix 1. List of interviews carried out during my fieldwork

Note:				
(*) These interviews were not recorded				
	Code	Interviewee	Description	Interview date
1	Mo-1	Alfonso Alvear	President of the Neighbourhood Council	12-12-2013
2	Mo-2	Cecilia Vallejos	Vice President of the Neighbourhood Council	12-12-2013
3	Mo-3	Luis Solar	Delegate of El Morro Football Club	18-12-2013
4	Mo-4	Nelson Venegas	Treasurer of El Morro Fishermen´s Union	15-01-2014
5	Mo-5	Oscar Alvear	President of Los Jinetes del Mar	18-12-2013
6	Mo-6	Alonso Alvear	Ordinary community member	12-12-2013
7	Mo-7	Silvia Constanzo	Ordinary community member	18-12-2013
8	Mo-8	Luis Garay	Ordinary community member	15-01-2014
9	Mo-9	Alicia Garay	Ordinary community member	15-01-2014
10	Mo-10	Francisca Rodriguez	Ordinary community member	15-01-2014
11	Mo-11	Juan Salvador	Municipal officer	17-01-2014
12	Mo-12	Guillermo Rivera	Municipal officer	21-12-2013
13	Mo-13	Mauricio Torres	Municipal officer	16-12-2013
14	Mo-14	Ana María Arzola	Municipal officer	20-01-2014
15	Mo-15	José Zurita	Municipal officer	07-02-2014
16	Mo-16	Maricela Coppeli	Municipal officer	07-02-2014
17	Mo-17	Salvador Águila	Hogar de Cristo officer	30-01-2014
18	Mo-18	Johan Bórquez	Hogar de Cristo officer	05-02-2014
19	Mo-19	Mathilde Moussard	Student researcher	21-03-2014
20	Mo-20	Joselin Bello	Volunteer in the fire department of Talcahuano	02-01-2014

21	Mo-21	Paola Venegas	Director of Salinas Camp	16-01-2014
22	Mo-22	Paola (Hija Sara)	Secretary of Salinas Camp	06-02-2014
23	Mo-23	Johana Pérez *	Ordinary community member	23-01-2014
24	Mo-24	Claudia Muñoz	Ordinary community member	16-01-2014
25	Mo-25	Sara Cariaga	Ordinary community member	06-02-2014
26	Mo-26	Claudia Placencia	Ordinary community member	16-02-2014
27	Mo-27	Ana Véliz	President of Renacer de Santa Clara Camp	23-01-2014
28	Mo-28	Sebastián López	President UNJU	20-01-2014
29	Mo-29	Eli Rojas	Ordinary community member	16-01-2014
30	Mo-30	Teresa Valdez	Ordinary community member	23-01-2014
31	Mo-31	Juan Valdez	Ordinary community member	16-01-2014
32	Mo-32	Sofía Aguilera	Ordinary community member	24-01-2014
33	Mo-33	Margarita del Solar	Ordinary community member	24-01-2014
34	Mo-34	Kito Miyagi	Ordinary community member	24-01-2014
35	Mo-35	Elizabeth Uribe	President Rocuant Camp	26-12-2013
36	Mo-36	Ruth Mery Alarcón	Secretary Rocuant Camp	26-12-2013
37	Mo-37	Erika Gutiérrez	Ordinary community member	26-12-2013
38	Mo-38	Verónica Chacano	Ordinary community member	16-02-2014
39	Mo-39	Irene Arancibia	Ordinary community member	16-01-2014
40	Mo-40	Pamela Gaete	Ordinary community member	25-01-2014

41	Mo-41	Tatiana Arancibia	Ordinary community member	25-01-2014
42	Mo-42	Gisela Arancibia	Ordinary community member	25-01-2014
43	Mo-43	Claudia Ulloa	Municipal Officer	11-02-2014
44	Mo-44	Wladimir Varela	Municipal Officer	11-02-2014
45	Mo-45	Jaime Romero	Municipal Officer	30-12-2013
46	Mo-46	Heissel Hunter	Municipal Officer	07-02-2014
47	Mo-47	Marisol Espinoza*	Municipal Officer	02-01-2014
48	Mo-48	Carolina Vera	Social worker of Community Health Centre	21-12-2013
49	Mo-49	David Spinola	Director of Nursery School	29-01-2014
50	Mo-50	Carolina Landaida	Officer of 'Reconstruyéndonos' project	21-03-2014
51	Mo-51	Jessica Montecinos	Representative of a Christian Church	28-12-2013
52	Mo-52	Priscilla Cartes	Hogar de Cristo officer	05-02-2014
53	Mo-53	Magaly Mella	Researcher of the Universidad del Bio-Bio	19-03-2014
54	Mo-54	Lientur Grandón	Director of the Fire Department in Talcahuano city	22-11-2014