What Makes a Community Resilient to a Flood Disaster?

A case of Seoul in South Korea

Jeongeun Chae

This dissertation is submitted for the degree of
Doctor of Philosophy

School of Architecture, Planning & Landscape
Newcastle University

2024

Abstract

Disaster resilience is a concept that emphasises the capacity of the affected system to respond to unexpected adversity. As a new perspective on dealing with disasters, it draws attention to the complex interaction between humans and the environment. The ‘community’ is considered a significant agent in discussions of disaster resilience. This thesis aims to determine what community factors enable communities to build disaster resilience. In order to handle this question, it is necessary to discuss more clearly who should be resilient more fundamentally. This study selected two areas in the Korean capital city of Seoul that were severely damaged by torrential rains in July 2011: Jeonwon village and Raemian Arthill apartment complex. The experience of the disasters in the two areas was analysed in various ways using interviews and document analysis methods.

The main finding of this study was that local communities for residents were not well recognised. People become residents of an area simply by living there, but that does not mean being part of the ‘community’. In addition, various social and environmental factors in the two areas may lead to a decrease in interaction between residents, which was another cause of local communities not being recognised by residents. I also discuss the possibility of local governments, sometimes used interchangeably as local communities, as disaster resilience agents. In the absence of a suitable local community, the expected factors that enable the community to improve resilience were not well embodied. Communities cannot accumulate successful experiences, which hinders learning and building adaptive capacity, militating against building disaster resilience. Most importantly, local communities, which have not been clearly identified, can cloud many issues in the disaster resilience discussion. Disaster resilience can be discussed very differently depending on what communities (with presumed resources and capabilities) are viewed as; for example, neighbourhoods, villages, apartment complexes or local governments. Above all, it seems necessary to ask questions about what the community – which is the key subject of disaster resilience – is.

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Acknowledgments

This thesis was able to be achieved thanks to the love and support of many people.

First and foremost, I would like to express my heartfelt gratitude to my supervisors, Dr. Andrew Donaldson and Dr. Cat Button. Their perceptive and critical comments guided my research on a better path without getting lost a lot. Above all, their warm encouragement has been a great help to me in continuing my research. I think I will miss their witty chats.

A huge thanks goes to my family members in Korea: Mum and Dad, mother-in-law, father-in-law, Dongwon, and Gukyoung. Thanks to their love and support, I felt like they always being there for me regardless of their distance. And special boxes filled with Korean food and other things. The large boxes the family often sent excited me as if I were opening a present from Santa. Special thanks to my mother-in-law, her text on the day of the Viva greatly encouraged me.

I would like to thank my friends in Newcastle who were standing with me through thick and thin: Kyuseon, Hyunmi, Bora, and Hyoyeon. The tea and beer I had with you were the joy of my life.

Additionally, I must express my gratitude to all participating in field research. Thanks to them, I could obtain valuable research data in a limited time.

I would also like to dedicate my work to my beloved three men. To Byung Choon, as a best friend and colleague. I am glad I went through this rough rollercoaster with you. I bet this work would not have been possible without you. I have a lot to learn from you. All of the enjoyable times with you, like exercise, barbecue, beer and wine, were cherished and unforgettable memories. To my little angels, Jinyu and Jinho. I felt like recharging my energy whenever you hugged me and smiled at me.

Lastly, thank you, God for everything you have done for me.

Chapter 1. Introduction

Droughts, floods, and typhoons are natural phenomena related to the forces of 'wind' and 'water', which are very destructive to the human system. Moreover, patterns of recent disasters are rather different from earlier ones. According to Leaning and Guha-Sapir (2013) (see Fig. 1-1), the frequency trend of hydro-meteorological disasters has seen a steep rise since the 1990s; they are occurring with increasing intensity and the damage inflicted has become wider and more serious. While the frequency and magnitude of weather-related anomalies are growing, predicting the likelihood of weather climate occurrence is becoming increasingly difficult.

This study explores disaster resilience, focusing on flood disasters. In South Korea, the damage from storm floods has been increasing, in line with global trends. Flooding caused by a localised torrential rainfall is a natural disaster that causes the most significant human and economic loss in Korean cities every year (Shin et al., 2011). According to the *Disaster Yearbook* (Ministry of the Interior and Safety, 2017), the accumulated amount of flood damage from 2006 to 2015 is about 20 trillion won (equivalent to about £13.7 billion sterling), and the costs have been increasing over time. Due to the monsoon rain in summer, water and soil have flooded luxury apartments in the middle of Seoul, the capital city of South Korea. The economic and human costs that ensued were the most serious and talked about social issues in 2011 (Korea Meteorological Administration, 2011c). That year, about a quarter of the total annual rainfall in Seoul fell in one day. This amount was far above the limit set by the design frequency applied to the urban sewerage infrastructure (Korea Meteorological Administration, 2011c).

According to the IPCC, human-induced climate change is the leading cause of growing abnormal weather, and abnormalities caused by climate change may become more severe over time (IPCC, 2014). As damage caused by extreme weather events has increased and intensified over the years, current response systems have led to the realisation that new thinking, new analytical frameworks and new solutions are needed, particularly in risk reduction and disaster management (UNISDR, 2005). There has been a growing awareness that more fundamental change is needed in responding to these risks to minimise a substantial loss caused by sudden hazards. The term that has risen to prominence as a result of this tendency is 'resilience'. In disaster management, the concept of resilience, which emphasises the capacities of a 'community' to deal with adverse climate effects by absorbing the shocks and recovering from them is gaining traction as a new, alternative framework within disaster response.

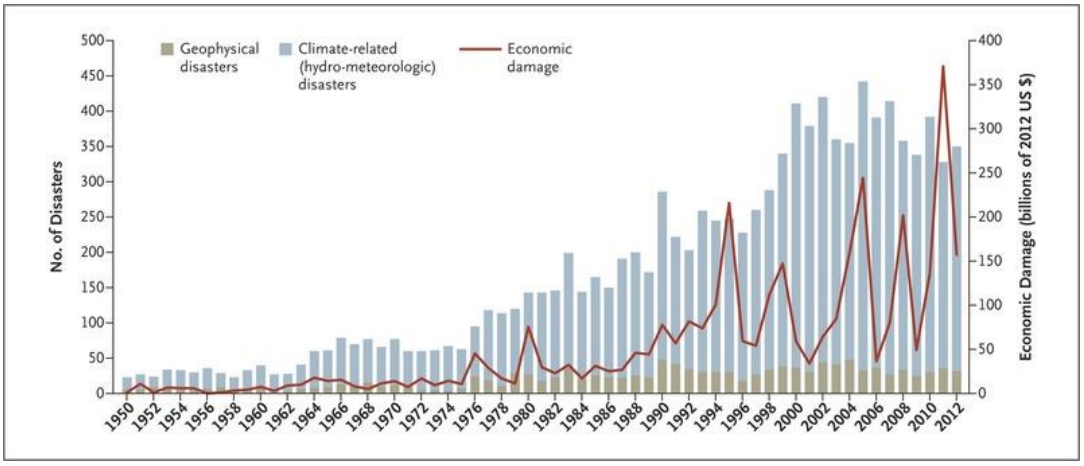

Figure 1-1 Natural disaster trends, 1950-2012
(Source: Leaning and Guha-Sapir, 2013)

Many researchers have begun to explore the concept of resilience when analysing the effect of climate change (Bruneau et al., 2003; Folke, 2006; Cutter et al., 2008; Burton, 2012). Resilience is defined in various ways. So far, there is no widely agreed definition of resilience in academics. The phrase ‘bouncing back’ is frequently used to define resilience, which has contributed to the concept's popularity. It has the somewhat idealised concept that disaster-affected places can use their own capacities to overcome risks. In resilience theory, it is assumed that human and natural systems (and combined socio-ecological systems) have the ability to maintain their state or function to some extent despite external influences. How well a system resists and recovers from a crisis depends on many attributes of the system affected (Berkes and Ross, 2013; Pfefferbaum et al., 2017). Even though a semantic agreement has yet to be reached on what makes a community resilient and how resilience can be enhanced, it is already clear that a resilient community is less vulnerable to disasters than one that is not (Klein et al., 2003). As the concept of resilience becomes increasingly popular, many studies have already been carried out to utilise this concept. However, the concept has been used uncritically as a word meaning ‘a kind of something advisable to manage disasters’ with many ambiguities (Klein et al., 2003; Manyena, 2006; Davoudi, 2012). The concept of resilience needs to be more concrete if it is to be used as a useful framework for practitioners and policymakers. In this regard, it is essential to identify the factors that determine community resilience to a flood disaster.

It is worth noting that in the discourse of disaster resilience, the community is mentioned as the key subject. As a result, the term ‘community resilience’ (Colten et al., 2008; Norris et al., 2008; Kirmayer et al., 2009; Ntontis et al., 2018) or ‘community disaster resilience’ (Mayunga, 2007; Cutter et al., 2014) is frequently used to investigate resilience in the field of disaster. Many scholars concur that a place-based approach is more effective to overcome disasters such as floods (Tobin, 1999; Paton and Johnston, 2001; Cutter et al., 2008; Norris et al., 2008; Vaneeckhaute et al., 2017). Scholars with this view believe that regions have

different contexts in terms of population, economy, society, history and culture. Disaster issues also need an approach that reflects the context of these regions. In this regard, the circumstances and conditions of the community may determine how well it can respond to natural disasters and recover from them. The determinants suggested in the resilience studies can be broken down into the following: information accessibility, agency, social networks, learning, resources, emergency preparedness, institutional characteristics, social capital, and so forth (Smit et al., 2001; Magis, 2010; Berkes and Ross, 2013; Ross, 2014).

In this study, 'community' will be a major research keyword along with 'resilience'. The concept of community has also been an important research subject in social science for a long time. It is, however, as difficult to define the term 'community' as it is to define 'resilience' (Hillery, 1955; Cohen, 1985; Day, 2006). In community resilience literature, although there is something in common that the community refers to as a 'place-based' region, it is used in a wide variety of meanings, such as regions affected by a disaster, a shared fate entity (Norris et al., 2008), and local governments (Kang, 2014). Communities, along with individuals, are regarded as appropriate agents with resilience against the external negative influences, and both 'community' and 'resilience' terms are being used together. Because the resilience of a community is different, some communities (higher resilient communities) can overcome disasters better than others in the same stimulus. This study begins with the assumption that the intrinsic properties of the community would affect the dimension of resilience.

In South Korea, the community has distinctive characteristics compared with those of other countries. It is often not clear what a community means. As Williams (1983) points out, the word 'community' is used as 'desirable' as a social relation because it is a 'warmly persuasive word' (p. 76). Mulligan et al. (2016) criticise the 'community' being used to appeal to the public in some programmes or policies. 'Community' is often used as a catchword for site development projects by policymakers and practitioners. Besides, communities are not semantically distinguished from words such as administrative districts, villages, towns or neighbourhoods. Indeed, in studies on the subject of community resilience, 'community' indicated a borough of a municipality, *gu* (구, 區)[1] (Gyeonggi Research Institute, 2013; Kang, 2014). The housing type is also a crucial factor that distinguishes community features. Around half of the population live in high-rise apartments,[2] and individual apartment complexes constructed by residential environment improvement projects or construction projects are classified as communities. Many of the properties of these communities can influence

[1] One of the administrative districts in South Korea; there are 300,000~500,000 persons/30~50 km^2 in each *gu*.

[2] According to a survey by the Ministry of Land, Transport and Dwelling (2018), the percentage of people living in apartments was 48.6% (42.0% in Seoul) in 2017.

resilience against disasters in a variety of ways. This study will explore the Korean situation in depth and examine its impact on building resilience.

This study focuses on the impact of extremely heavy rainfall that causes serious damage and explores the characteristics of communities that strengthen and weaken resilience to flood disaster. It also investigates which factors among these determinants play a more critical role in enhancing disaster resilience. The main research questions are as follows:

1) Can a community's characteristics determine its disaster resilience?
2) What are important factors that make a community resilient?

The research consists of the following processes. In the first part, the background, objectives and questions of this study are explained. In the second chapter, there is a literature review of the two main concepts of 'resilience' and 'community'. The study examines how the concept of resilience has evolved academically and explains why this concept is drawing attention in the field of disaster management. In many disciplines, the concept of community has also been regarded as a difficult term to define. Nonetheless, the community is regarded as the most important unit in the disaster resilience literature. Accordingly, this thesis explains why many studies use the term 'community' with the term 'resilience', which is why community is being discussed as the primary agent of resilience against disaster. In addition, the research tackles the characteristics associated with building disaster resilience among those mentioned in the literature. The third chapter accounts for the methodology that is used in this research. It focuses on the methods that were applied in this study to investigate the research questions. Chapter 4 mentions flooding, a risk that is an object (difficulty) to resilience. It is explained why flooding poses a risk in Korea, what makes a flood disaster distinctive, and why these characteristics should be taken seriously. The subsequent chapters specifically present the results obtained from the study. Chapter 5 focuses on the details investigated in the two case study areas as local communities in Korea. The last part of this chapter also deals with a local government, which is often referred to as a local community. Chapter 6 connects local communities and disaster resilience, focusing on how disaster resilience relates to the characteristics of local communities. The final chapter is the conclusion of the study, summarising the research questions and processes, and presenting the main findings.

Chapter 2. Literature review

2.1 Introduction

This chapter will conceptualise two main key concepts underpinning this study in more detail; resilience and community. There have been considerable changes in perspective and understanding of these two keywords over time. This chapter is primarily divided into three sections. The first two sections present a theoretical discussion process for the two main keywords. It presents how the main concepts, resilience and community, have developed, and what subjects are mainly dealt with in the social science field, especially in the disaster field. This part introduces how this study has been derived from the flow of issues. It also introduces the theoretical development of the concept of resilience in Korea. Section 2.3 presents the conceptualisation of community concepts and why communities are mentioned in the disaster resilience debate. In the discussion of communities, we introduce how the debate of place-based communities has developed, and explain why this thesis explores place-based communities in this study. And the last section, 2.4, describes community disaster resilience. This part presents a theoretical framework that is the basis for the theoretical discussion of the analysis of this study.

2.2 Conceptualising resilience

2.2.1 Conceptual development

‘Resilience’ has become a favourite word in many disciplines. Why the word has gained academic popularity is related to changes that human and environmental systems have been experiencing on a global scale. The number of climate-related hazards such as droughts and typhoons, which might have a catastrophic impact on affected systems, has been increasing. A hazard may turn to a disaster. According to UNISDR (2017), a hazard is a phenomenon or substance that has the potential to damage affected systems. Natural events or anthropogenic factors such as technological, societal or biological factors may be referred to as hazards. A risk, which has a similar meaning to a hazard, is a set of potential negative consequences that affect any systems over a specific period. Risk is the word that emphasises the probability that a system will be negatively influenced by hazards. A disaster, on the other hand, is defined as when a system’s functionality is severely disrupted due to interaction between any hazardous events and the conditions of an affected system. Therefore, a disaster refers to the result of serious damage to society or community caused by a hazardous event.

Change in human systems is inevitable and continuous (Magis, 2010). Change itself implies uncertainty, and humans fear this uncertainty (Burton, 2016). The problem we have been confronting is more severe, as ‘uncertainty’ has become greater than in the past. If uncertainty exceeds expectations or how prepared elements of the systems are, the disruption the system faces can become more serious. People have been trying to figure out what causes the change, and then control the causal factors to reduce the impact of change on the system. As the notion of resilience has been regarded as a sort of solution addressing the flux and uncertainty of such systems, it has been gaining interest in many fields (Chapin et al., 2009; Davoudi, 2013). Not only academics, but also people from a wide range of organisations, such as policymakers, planners and practitioners, are showing great interest in this concept.

The etymological root of the word ‘resilience’ is the Latin *resilio*, which means ‘jump back’ (Klein et al., 2003). It has been a long time since the word has existed in the English language, but it has been derived in the metaphorical sense since the study of Holling (1973). Holling introduced a specific concept of resilience in his seminal work, ‘Resilience and stability of ecological systems'. He explained the concept of resilience in terms of external disturbance and restoring balance in the ecosystem. This concept was first adopted in physics, to refer to *elasticity*, i.e. the ability of a system or material to return to its original shape and size after disturbance (Ross, 2014). Subsequently, the idea of resilience is applied to many other fields, such as ecology, psychology, economics, business administration and engineering (Hollings, 1973; Timmerman, 1981; Pimm, 1984; Dyer and McGuinness, 1996; Luthar, 2003; Rose, 2004;

Briguglio et al., 2009). Nowadays, it is widely used in multidisciplinary and interdisciplinary studies.

While the resilience concept has been utilised across different fields, exactly what resilience is has been not defined. Many scholars have criticised the utilisation of this term as lacking clarity (Klein et al., 2003; Davoudi, 2012; Ross, 2014). Davoudi (2013) noted that it is necessary to be very careful when applying this concept to human systems. By looking at how this concept has evolved in each field before applying resilience to the disaster management field, it is possible to reconsider the applicability and limitations of the concept.

2.2.1.1. Engineering resilience

Resilience was developed by Holling into a more metaphorical use of concepts (Norris et al., 2008). Holling is a scholar who studied this concept with systemic thinking, and his studies have been cited the most by many scholars interested in this concept. That said, the concept of resilience is not a completely new term. Prior to Holling's work, physicists had used the term 'resilience' to explain the properties of elastic materials (Davoudi, 2012). How the concept of resilience is used in engineering can be confirmed in the following definitions.

> *"The ability of a system to return to equilibrium state after a temporary disturbance"* (Holling, 1973, p. 14).

> *"Resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks"* (Walker et al., 2004, p. 3).

As such, engineering resilience explains the concept of resilience from an equilibrium perspective (Drobniak, 2012). In engineering, the dynamic process by which a system returns to a balanced or steady state after disturbance is explained by the resilience concept. In this view, the subjective of resilience is to return the system to a stable state or to maintain constancy after a shock. The return time and the efficiency of returning to the original state are considered important measures in this process (Holling, 1996).

In Pimm's (1984) and Bodin and Wiman's (2004) studies, they defined resilience as the 'speed' by which a system returns to its original state after displacement or disturbance. In this point of view, the concept of resilience was regarded as a predictable notion, and measuring the return time was attempted. Predictability makes quantifying resilience possible. Increasing resilience means reducing the time it takes to restore the system and enable a quick recovery to a state of equilibrium. For a system to have constancy, efficiency and predictability in engineering is therefore very important. The simplest way to measure the resilience of a system is to calculate the return time it takes to transition from the shock point to the original point (McDaniel et al., 2007).

This engineering approach does not apply when explaining the performance of desirable functions even if the system is restored and does not reach equilibrium. Holling (1996) argued that after external disturbance, the ecosystem might return to another normal system, even if it is not in the same form as before. The state of equilibrium that the ecosystem has reached is different from that which existed before the disturbance, but it is a desirable function to maintain the ecosystem. Considering a system as lacking in resilience simply because it is not recoverable is controversial. There are abundant examples of ecosystems that have been restored from external disturbances, such as floods and forest fires. This means that the system, which deviated from the balanced state as a result of the disturbance, has formed a new equilibrium point that is different from the previous one.

2.2.1.2. Ecological resilience

Holling tried to understand resilience through systemic thinking. From this point of view, systemic thinking is the starting point to address issues. When it comes to approaching a problem, this means trying to understand it in its whole context (Gunderson and Holling, 2002). One of the significant contributions of his study is that many studies attempt to understand resilience in its related context.

Ecological resilience is a concept that Holling discussed while observing a boreal forest ecosystem (1973), explaining how an ecological system that suffers external stress can self-reorganise and maintain within critical thresholds. Whether an ecological system can be maintained within these thresholds is an important measure of resilience. A number of ecologists have explored ways to improve resilience in ecological systems, and they have found that factors such as species diversity, stability and functional redundancy (Folke et al., 2002) within the ecological system can improve resilience (Peterson et al., 1998).

However, it can be said that the ecological system differs from the previous engineering approach in that it assumes multiple possible equilibria rather than a single stable state (Gunderson, 2000; Adger, 2005; Chapin et al., 2009; Davoudi, 2012). In other words, it is assumed that the ecological system that has undergone changes does not necessarily return to its original state, but can also assume a changed state (Gunderson and Holling, 2002; Folke et al., 2010). Therefore, resilience in this sense does not mean returning to the same existing equilibrium state as in engineering resilience, but that the ecosystem is restored to a new balanced state as it is optimised for the new environment.

2.2.1.3. Social-ecological resilience

Since the 1990s, the conceptualisation of sustainability has also resulted in the emergence of the concept of ‘socio-ecological systems’ (SES) (Adger, 2000), thereby stimulating and facilitating research on the interaction between ecological and socio-economic systems

(Gunderson and Holling, 2002; Folke et al., 2010). In studies focusing on this topic, human systems are dependent on environmental resources, and environmental systems are affected by changed occurrences in various human activities. Ecological resilience focused exclusively on ecosystems, but neglected its relevance to social systems that are closely related to ecological systems. Accordingly, socio-ecological resilience has emerged to overcome the limitations of the ecological resilience approach and to explain the process of adaptation and change of the system to external stimuli through learning and self-organisation.

Socio-ecological resilience has its roots in an evolutionary approach. In this view, disturbances and shocks can be a trigger for evolution towards systems, improvement, structure and process (Folke, 2006). The definition of transformation is:

> *"the capacity to create untried beginnings from which to evolve a new way of living"* (Walker et al., 2004, p.7).

Some scholars who have noted the relationship between human beings and ecosystems have described resilience to the degree that a system can self-organise (Carpenter et al., 2001; Folke et al., 2002). The system has a critical threshold to maintain its original state or function in disturbances (Gunderson and Holling, 2002; Folke et al., 2010). However, if the perturbation exceeds the threshold, systems may have the opportunity to evolve and develop new systems, while overcoming external shocks. This change is called transformability when the destructive consequences lead to beneficial changes to the system (Berkes and Seixas, 2005; Gunderson and Holling, 2002; Magis, 2010). Another concept that is regarded as important in building system resilience is self-organisation (Adger et al., 2005; Norris et al., 2008; Chaskin, 2009; Magis, 2010). This is called self-reliance in the social system (Davoudi, 2018): this means that the components of a system in a disordered situation create organised order and balance through mutual interactions. The system is considered to have the ability to adapt through learning and self-organisation as well as having the general ability to maintain functional persistence in the midst of external impact (Folke, 2006; Carpenter et al., 2005).

Manyena et al. (2011) attempted to explain such a transformable human system as a 'bouncing-forward' concept. In their argument, the 'bouncing back' discussed in resilience is an inappropriate concept in ecology or human systems that may deviate from normal conditions. In particular, the human system can move change forward towards new development opportunities. As such, discussions on social-ecological resilience, which were interested in the interaction between humans and nature, gradually shifted to a human-centred approach, one of which is human subjectivity (Dovers and Handmer, 1992). Intentional actions that only humans carry out to allow people to 'learn', and 'adaptation' in which learning ability is emphasised, have emerged as important in the resilience literature. This perspective of learning and adaptation is well revealed in the following definition:

"the ability to absorb perturbations without changing overall system function, the ability to adapt within the resources of the system itself, and the ability to learn, innovate, and change" (Adger et al., 2011, p.757).

The self-organised system can adapt to unexpected change and uncertainty based on its experiences, called 'collective memory' (Selman, 2012). Therefore, a system's adaptability and capacity to change through self-organisation and transformability are important. In this respect, adaptive capacity and transformability are discussed as important concepts in this area. Panarchy is a framework for describing the adaptive cycles of an ecosystem. Fig. 2-1 shows that a nature system has hierarchical structures and continues to change by interacting with various scales. Gunderson and Hollings (2002), who developed the adaptation cycle of ecological systems in these terms, emphasise that not only the ecological system but every system has multiple scales. Moreover, the system goes through a dynamic process of change. Due to this inherent uncertainty, the outcome of change is difficult to predict, but it can also be an opportunity for transformation.

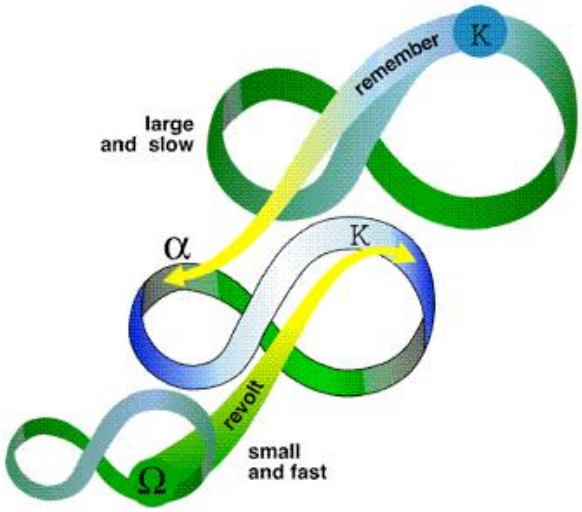

Figure 2-1 Panarchy framework
(Source: Gunderson and Holling, 2002)

2.2.1.4. Psychological resilience

Psychological resilience, which is discussed mainly in psychology or psychiatry today, assumes its origins differently. In these disciplines, research on resilience is about individuals who are not vulnerable to adverse circumstances and who have matured well (Werner et al., 1992).

Werner et al. (1989) first used the concept of resilience in psychology. They studied the phenomenon where some children (almost two-thirds of children) on Kauai Island, Hawaii, behaved badly while others did not when they hit an adolescent age. They named the latter 'resilient children' and explained their differences with the other children. Psychological

resilience is defined as the ability of an individual to grow up and overcome adversity or difficult situations (Reid et al., 2013; Masten et al., 1990; Egeland et al., 1993). In the early days when the concept of resilience was addressed, the focus was on individual characteristics, but the area of interest gradually expanded to include social and cultural environments, such as those involving caretakers, interactions with friends and socio-cultural factors that affected personal development and adaptation. It has been useful in explaining the diverse experiences of how humans have coped with security, livelihood and threats to well-being (Fredrickson et al., 2003).

There is also a point of view that psychological resilience is the basis for disaster resilience. It is argued that subjects (individuals in psychology) such as human beings or communities are concerned with the units that deal with adversity (Berkes and Ross, 2013) and that resilience is a continuous process like an individual's development, not a stable or achieved outcome (Luther, 2006).

2.2.2 The concept of community disaster resilience

The background in which disaster management and the concept of resilience are debated together begins with the recognition that the paradigm for managing disasters needs to be changed. As risk and uncertainty have increased globally, there has been a growing awareness that changes are required in the way that hazards are dealt with. The Yokohama Strategy of 1994 was a significant turning point from reactive response to disasters to management response (Manyena et al., 2011). Subsequently, the Hyogo Framework for Action (HFA), which was adopted in 2005 (United Nations Office for Disaster Risk Reduction; UNISDR, 2005), highlights the concept of disaster resilience. The conference emphasised the need for measures to reduce disaster risk in various aspects from recovery-oriented disaster management to prevention and preparation using the concept of Disaster Risk Reduction. The Hyogo framework defined disaster resilience as follows.

> *"The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards"* (UNISDR, 2005, p.4).

As can be seen from this definition, it is highlighted that entities that are at risk should have the ability to respond on their own. It is also worth noting that the community is referred to as a major entity possessing disaster resilience.

The definition given by UNISDR (2009) in Table 2-1 has contributed significantly to ensuring that resilience is used as a practical framework in disaster management.

> *"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"* (UNISDR, 2009, p.24).

Discussions on disaster resilience have continued throughout the world since the World Conference on Disaster Risk Reduction (UNISDR, 2005).

In the literature dealing with the terms 'disaster' and 'resilience', the concept of resilience within the interaction between humans and the environment system can be connected to socio-ecological resilience (Klein et al., 2003; Tierney and Bruneau, 2007). The capacities of social systems, such as learning and self-organising (Carpenter et al., 2001; Folke et al., 2002; Klein et al., 2003), are a characteristic of the human system, and are distinguished from the ecological system.

Until resilience was introduced into the field of disaster risk management, the goal of such management was to minimise damage to the system and to return the affected community to a ‘normal’ state as soon as possible (Manyena, 2006). However, as the recent disasters across the world become more significant, it has become clear that disaster management is limited only to mitigating and preparing for disasters. Because of the increasing uncertainty about aspects such as the frequency and intensity of disasters, it has become very difficult to determine to what extent measures should be taken to reduce the impact of disasters. No system can completely avoid the effects of natural disasters. To prevent and counteract the dangers of risks associated with disasters, it is also critical to be aware of the processes of absorbing shocks, recovering from shocks and adapting to the changing environment (Norris et al., 2008).

The concept of resilience has become common in disaster management since its first use in the field of natural disasters in 1981 by Timmerman (Timmerman, 1981; Klein et al., 2003; UNISDR, 2005; Cutter et al., 2008; Norris et al., 2008). Since then, several scholars have tried to define disaster resilience. Various definitions are presented in Table 2-1. The table is organised chronologically, and it can be seen that more and more studies have tried to define disasters and resilience in recent years. The table demonstrates the fact that the community is emerging as a subject in disaster resilience discussions. However, we can see that there is no semantic consensus yet through these various definitions. The common feature of various definitions is that resilience is the concept explained by the ability or capacity of the system.

Table 2-1 Definitions of resilience

Author	Year	Definition	Perspective
Holling	1973 (p.17)	Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist.	ecological
Timmerman	1981 (p. 21)	Resilience is the measure of a system's or part of a system's capacity to absorb and recover from the occurrence of a hazardous event	disaster
Pimm	1984 (p.322)	How fast the variables return towards their equilibrium following a perturbation. Resilience is not, therefore, defined for unstable systems.	ecological
Adger	2000 (p.361)	The ability of communities to withstand external shocks to their social infrastructure	social
Gunderson	2000 (p.430)	Resilience is an emergent property of ecosystems and is related to self-organized behaviour of those ecosystems over time	ecological
Buckle, et al.	2001 (p.8)	Resilience is broadly the capacity of a group or organization to withstand loss or damage or to recover from the impact of an emergency or disaster	disaster
Masten	2001 (p.227)	Resilience appears to be a common phenomenon that results in most cases from the operation of basic human adaptation systems. If those systems are protected and in good working order, development is robust even in the fact of severe adversity	psychological
Folke et al.	2002 (p.438)	Resilience, for social-ecological systems, is related to (i) the magnitude of shock that the system can absorb and remain within a given state; (ii) the degree to which the system is capable of self-organization; and (iii) the degree to which the system can build capacity for learning and adaptation	social-ecological
Walker et al.	2004 (np)	The capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks-in other words, to stay in the same basin of attraction	social-ecological
UNISDR	2005 (p.4)	The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure	disaster
Cutter	2008 (p.599)	The ability of a social system to respond and recover from disasters, and this includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat	disaster

Author	Year	Definition	Perspective
Norris et al.	2008 (p.130)	A process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance	disaster
UNISDR	2009 (p.24)	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	disaster
Longstaff et al.	2010 (p. 4)	The capacity to absorb disturbance, undergo change and retain the same essential functions, structure, identity, and feedbacks	community resilience
Magis	2010 (p.401)	Community resilience is the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise.	community resilience, disaster
Chandra et al.	2011	The sustained ability of a community to withstand and recover from adversity	community resilience, disaster
Ungar	2011 (p.1742)	Social capital, physical infrastructure, and culturally embedded patterns of interdependence that give it the potential to recover from dramatic change, sustain its adaptability, and support new growth that integrates the lessons learned during a time of crisis	community resilience, health
DFID	2011 (p. 6)	Disaster Resilience is the ability of countries, communities and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses- such as earthquakes, drought or violent conflict without compromising their long-term prospects	disaster
Aldrich and Meyer	2015 (p.255)	Community resilience describes the collective ability of a neighbourhood or geographically defined area to deal with stressors and efficiently resume the rhythms of daily life through cooperation following shocks	community resilience, disaster

Source: Author

In disaster literature, resilience is described as a general ability to 'bounce back' after experiencing unanticipated dangers, thereby emphasising community capacities (Manyena, 2006; Paton and Johnston, 2006; Ross, 2014). However, some scholars have raised the view that systems that have suffered a severe disaster are unable to return to their previous state (Manyena et al., 2011). It is only possible for engineering to emphasise the '*status quo ante* or any normal state', and massive external stimuli in ecosystems or human systems are inevitably subject to changes other than the former state (Paton and Johnston, 2006; Manyena et al., 2011). Even if a community cannot return to its original state, the community that has wrestled

with adversity may have an opportunity for new development by overcoming the crisis (Paton and Johnston, 2006). The community learns what is missing in the process of overcoming disasters and improves shortcomings. Leaning from experience develops its capacity to respond more efficiently to future emergencies (UNISDR, 2005).

The risks arising from disasters affect human beings, as well as the entire system involving them. People who have suffered direct damage from a disaster endure psychological effects, such as stress and trauma; physical damage, such as infrastructure or property destruction, leads to loss of resources for society as a whole. This is why many disciplines and interdisciplinary studies are interested in disaster resilience. Disaster resilience that is addressed in the engineering field focuses on strengthening of the resilience of buildings or social infrastructure (Bruneau et al., 2003).

Although there is no consensus on the definition of the concept among scholars in this field as yet, there are some features of disaster resilience that are considered to be significant. The system, as a buffer zone, has its own ability to offset the effects of a disaster (Timmerman, 1981; Manyena, 2006; Cutter et al., 2008). It is still unclear what disaster resilience is, but it is clear that it serves a positive function to reduce external influences (Chaskin, 2008). Main agents, such as individuals and communities, have the capacity to withstand damage from disaster. The greater the capacity, the higher the resilience. The crucial point in disaster resilience is that it is a process, not an outcome (Klein et al., 2003; Adger et al., 2005; Folke, 2006; Manyena, 2006; Ross, 2014). There are scholars who explain resilience as a result of reaching a certain condition. Some researchers refer to resilience as an outcome of recovery, and some want to explain it as a kind of outcome to try to measure it by indicating it (Coleman and Hagell, 2007; Cutter et al., 2008). Cutter et al. (2008) argued that communities with high social, institutional and economic capabilities have high resilience. They also thought that community resilience could be compared and evaluated by creating a composite indicator. However, resilience as a process is emphasised more often (Doron, 2005; Manyena, 2006). Perspectives claiming resilience to be a process emphasise a continuous learning process and subsequent improvement of adaptive capacity. The system learns from experiences as it goes through disaster and develops its self-organising capacity.

This study will describe community disaster resilience as a desirable attribute that communities should have in response according to disaster response phases. Community disaster resilience refers to the capacity of the community to withstand the effects of anticipated disasters. It is the ability required of the community throughout the disaster. 1) In the pre-disaster phase, a community can minimise the effects of unpredictable adversity. 2) During the disaster, a resilient community can use its abilities to resist the event. 3) In the post-disaster

phase, a community can restore the community's original status or function; or, if the community fails to return, it must transform and adapt to a better new environment.

Criticism, nonetheless; why community disaster resilience?

The concept of resilience has gained popularity in multidisciplinary terms as it is considered a new alternative to dealing with change and uncertainty. As this concept gets attention in various fields, it receives several criticisms at the same time. At the centre of such criticisms is the 'ambiguity of concept'. The following words are numerous expressions of this concept: vagueness (Manyena, 2006), elusive concept (Titz et al., 2018), ambiguity (Ntontis et al., 2018), buzz word (Porter and Davoudi, 2012), umbrella concept (Klein et al., 2003), contradictory concept (Dunn Cavelty et al., 2015), slippery concept (Davoudi, 2012)

Gao (2018) pointed out that because the meaning of this term is ambiguous, practitioners sometimes interpret the meaning in accordance with its purpose. Dunn Cavety et al. (2015) also described resilience as 'can be in many places at the same time' (p. 4).

As Klein et al. (2003) argued, the concept is used like an umbrella concept encompassing all 'desirable things'.

The ambiguity of this concept can be an obstacle to its practical use of this concept. Measures to increase resilience may be judged completely differently from another aspect. For example, if households living underground suffer from frequent flooding, would it be a resilient measure to prevent people from living in such places? Are the displaced residents resilient? In Korea, people with relatively low solvency tend to prefer underground spaces with relatively low rents (Choi and Jang, 2020). Banning residence in half underground or underground spaces may create another problem for them. As such, if you do not take a multifaceted approach when dealing with a problem, another important but overlooked problem may arise.

Depending on whom the term 'resilience' is applied to, whether a specific subject has resilience or not may vary significantly. The application of resilience to any temporal scale is also a matter to be considered (Dunn Cavety et al., 2015). The short-term effects of any policy and plan will not necessarily equal the long-term effects. The factors that affect disaster resilience will differ for each disaster stage in terms of disaster problems. Therefore, in the discussion of community disaster resilience, questions that clarify the boundaries of the terms need to be raised first: 'resilience to what?', 'resilience for whom?' (Cutter, 2016, p. 110), and 'resilience of what to what?' (Davoudi, 2012, p. 305).

2.2.3 Perceptions of the resilience concept in Korea

In Korea, disaster resilience is still unfamiliar to citizens and people in the public sector. Some experts in academia have studied it, but there is still a lack of understanding surrounding the concept and how to apply it. As we will see in Chapter 6, the ordinary citizens whom the researcher met had not heard of the concept, and the civil servants and volunteers who worked in the disaster field knew little about the concept's meaning.

No Korean word matches the word 'resilience' in meaning, which can lead to ambiguity in usage and confusion in meaning. The word 'resilience' cannot be completely translated into Korean. Therefore, it is used as a foreign loan word. 'Resilience' is written in Korean as it sounds, '레질리언스' (the word in the first line in Table 2-2 below), and it is also used in a variety of ways, such as 'resilience', 'elastic recovery', 'elasticity', 'restoration capacity', 'adaptability', 'ability to overcome'. Using these terms slightly differently for one word may still disprove that users have a slightly different understanding of this concept. It is also necessary to check how diversely resilience is being used in the disaster sector. Specific search conditions have been set in the Research Information Sharing Service, a research data retrieval tool, to identify trends in relatively recent studies. From 2016 to 2020, results including both keywords 'disaster' and 'resilience' (in English)[3] were searched among Korean academic journals. Among the search results, only papers containing the words relating to 'resilience' in titles or abstracts were counted, and papers in nursing and medicine were excluded because they are not considered disaster fields. There were a total of 70 academic papers that met the conditions. The table below shows how the word 'resilience' is used in Korean academia.

[3] Even if the study is written in Korean, an abstract is usually written in English, so search results are also found in English keywords.

Table 2-2 How the word ‘resilience’ is being translated in Korean disaster papers

Korean	Meaning	Frequency
레질리언스	Resilience (loanword)	29
회복력*	recovery ability	16
회복탄력성	recovery elasticity	9
복원력*	restoration capacity	7
탄성력*	elasticity	4
방재력	disaster prevention capability	2
복원탄력성	restoration elasticity	2
대응력*	response ability	1
* Words recognised as standard language in the Korean Standard Dictionary		

As the results show, ‘resilience’ is not clearly captured in the Korean language. This may be because the word is difficult to express adequately in Korean. The word with the highest frequency was investigated as a loan word in the table above, which may be the result of disproving this. The next most frequently used expression, ‘recovery ability’ is described in the National Institute of Korean Language’s standard dictionary as the ability of something to return to its original state with elastic meaning, such as 'bounce back and return’. For this reason, it can be translated into phrases, such as ‘elastic force’ and ‘elasticity’. The phrase ‘recovery elasticity’ is a combination of the two words ‘recovery’ and ‘elasticity’, and is not seen as standard language. It is a phrase made to cover both meanings, but it is a new term created from words with different meanings, so it requires more meaningful agreement than other words in terms of use.

2.3 Conceptualising community

The ‘community’ is a contested concept in social sciences. Not only are the concepts related to multidisciplinary concepts such as humans, organisations and society, but there are also too many things to explain depending on which of the various layers the community concept focuses in a specific instance. There are so many different views of the community, the people who make up the community, their relationships, the things that make their relationships possible and the various external drivers that make the community’s attributes change. As such, looking into the community with only one specific lens and being able to grasp the entire community with it can cause many important things to be overlooked.

This section is connected to the question of why, in the disaster resilience literature, a community is considered an important unit. The agents that need to prepare for and respond to disasters are variously discussed according to disciplines that deal with the concept of resilience. Scholars in the field of psychology and public health have pointed out that people and communities differ in their ability to overcome adversity and their process of doing so (Brown and Westaway, 2011; Masten, 2001). Scholars use the concept of resilience at the individual and group level to explain these differences. For state or local governments, disaster resilience means having a comprehensive plan to improve disaster response capabilities and to manage the risks for an entire autonomous region (see the United Kingdom’s Resilience Programme, Subcommittee on Disaster Reduction, 2005). Thus, although discussions of resilience have included a variety of subjects, the disaster literature focuses more on community as an agent (Chaskin, 2008; Manyena, 2006; Norris et al., 2008; Paton and Johnson, 2001). It is therefore necessary to examine the concept and characteristics of the community and why it receives attention as a significant concept in disaster resilience.

2.3.1 Explaining the concept of community

The term ‘community’ has a meaning that is not as easily captured as ‘resilience’ (Elias, 1974; Walmsley 2006). Recently, the word ‘community’ has been used with a vast range of concepts. Mulligan et al. (2016) said that the community has ‘more layers of meaning’ (p.354). Some scholars also use expressions such as ‘community decline’ (Lee and Newbie, 1983), ‘community loss’ (Crow and Allen, 1994; Delanty, 2003). However, these expressions do not mean that the community no longer exists, but it would be reasonable to see that what the community means has become a different kind of community and that the concept has become much broader than Tönnies (see below) and the scholars that followed him have studied in the past (Clark, 2007).

The following phrase is a handwashing campaign held by the National Health Service (NHS) in the UK to prevent the spread of the Coronavirus, and is posted around the sink of public toilets.

> *“Collective Caring … Washing your hands thoroughly … will protect you, your friends, and more vulnerable members of the community from transmitting the Covid-19 virus”.*

What does ‘the community’ mean here? Is it a country or a region? Or is it an expression to emphasise the communal sense of ‘us’? It may be difficult for people to see this phrase and know exactly what it is pointing to, but it will not be difficult to grasp its intent. As such, ‘community’ is a word that is used very routinely, although not clearly captured.

There is a limit to the accurate generalisation of the meaning of ‘community’. A community cannot be defined without considering its social and historical contexts because its specification depends on who is using the concept, when it is being used, and what purpose it is being used for.

According to Williams (1983), the word ‘community’ has been used in the English language since the fourteenth century. In 1887, Ferdinand Tönnies, a German sociologist, published *Community and Association* (*Gemeinschaft and Geselischaft,* 1955), a collection of existing debates on the community concept. Since the introduction of this study, discussions have become hotter in academia, supporting or refuting his view. Sociology and anthropology, especially, have made community an important research subject. Although this concept has been addressed by many scholars, they concur that it is one of the most ambiguous and obscure words in sociology (Hillery, 1955; Cohen, 1985; Day, 2006). Due to having a wide range of meanings, the word is abused by policymakers and planners to attract public attention (Day, 2006; Walmsley, 2006). Mulligan et al. (2016) pointed out that it is likely to be used as a ‘desirable’ social relation because the word ‘community’ is a ‘warmly persuasive word’ (Williams, 1983, p. 76). However, as Day (2006) noted, this ‘elastic’ nature (p.1) may make it

easier to apply new compound words. An example of this is many large-scale development projects in South Korea with words such as ‘Building Community’, ‘Community Development’. Indeed, community is discussed in many disciplines: sociology, anthropology, psychology, planning and urban development, as well as resilience.

To talk of the ‘loss’ of community implies that there existed an ideal community image at some point in the past. This is the starting point of the discussion of the ‘Gemeinschaft’ presented in the study of Tönnies. *Gemeinschaft und Gesellschaft* by Tönnies (1955; Bauman, 2001), which has been criticised for triggering debate on community in sociology, has been cited by many researchers studying the community. These translate into ‘community’ and ‘association’, respectively. Tönnies’ *Gemeinschaft* is a community in which members link to places, experiences are shared through common origins and naturally formed interactions amongst members are through face-to-face meetings. In this community, formed around ‘region’, ‘place’ becomes an important mediating factor in the activities or relationships of members. Many of these types of communities had been observed in rural areas in the past, and he said that this rural community is a good example (Day, 2006). Since the radius of human movement rarely extended outside a specific space called a community in those days, the ‘region’ boundary in these communities was very closely related to the stability of the community. This community uses the adjective ‘traditional’ to highlight that it is from the past and does not exist nowadays (Delanty, 2003; Clark, 2007; Bradshaw, 2009; Coates, 2010).

On the other hand, another concept dealt with by Tönnies was *Gesellschaft*, which can be seen as an attempt to explain the concept of community by reflecting the changes of the times. According to his argument, social changes such as urbanisation, industrialisation and capitalism obscure social relations centred on family or relative groups, and is replaced by *Gesellschaft* relations (Tönnies, 2002 [1887]). This *Gesellschaft* is characterised as being individualistic and inhumane in contrast to *Gemeinschaft*. This *Gesellschaft* seemed insufficient to explain the intimate meetings or relationships of various people who existed beyond a certain place or area.

Efforts to understand social changes and communities together have led to discussions on the possibility of community existence, the issues of community boundaries and the nature of the community. In these discussions, the place became the focal point of various issues: it is also believed that the domain of place has expanded (Anderson, 1984), and it was argued that place was no longer considered important in conceptualising a community (Amin, 2004, Bradshaw, 2009). There is also a view that conceptualises a place as a space. This argument suggests that a place should be understood as a space rather than a geographical location. In this regard, the scope has expanded as society changed (Castells, 1996).

The social change that caused the meaning of place to disappear or widen is increased mobility. The changing nature of society has affected many of the feature of community. The development of information and communication technology, inter alia, has made the boundary of accessible areas pointless, and people have become able to connect with people who live far away (Castree, 2004; Brickell and Datta, 2011; Mulligan et al., 2016). In addition, as a result, the characteristics of group communities based on a specific 'place' have weakened and communities can be formed anywhere. Indeed, there are many virtual space-based communities that interact only on the web. This can also explain the tendency of people to belong to several groups at the same time. As people become more selective about the community, it becomes easier to join and escape from the community. Communication technology that transcends distance constraints makes this phenomenon easier. Wherever people have access to the web, they can express opinions such as consent or objection, purchase or refund, participation in or withdrawal from a group with just one click. For this reason, certain communities may have transient characteristics (Delanty, 2003; Mulligan et al., 2017).

Although the community essentially means having boundaries that delineates who belongs or does not belong to the community, the increase in mobility makes these boundaries difficult to maintain (Castree, 2004). Various spatial separations have arisen in people's lives. One's residence, workplaces and places to enjoy leisure can all be separated. Thus, places no longer necessarily need to be communities (Bradshaw, 2009), and Tönnie's traditional communities are considered to be declining or lost (Crow and Allen, 1994; Delanty, 2003) or have been dismissed as romantic concepts of pursuing nostalgia in the past (Wellman, 2001; Delanty, 2003).

Attempts to conceptualise the community in connection with 'space' have many limitations. Studies have emerged to explain reality as something that exists somewhere with a more 'social' concept rather than chasing it (Wellman, 2002). Along with this, we tried to explain the community's units as network relations between people, away from the perspective of targeting any specific group or region, such as family, neighbourhood and village (Bott, 1957; Coleman, 1990; Lyon, 1999; Crow and Allen, 1994; Putnam 2000). This approach also influenced social capital studies focusing on people's relationships, networks and bonds (Coates, 2010).

When the community is viewed as a social relationship, geographic proximity is no longer essential in establishing a social relationship. Bradshaw (2009) went further, from a non-place to a post-place community. From this point of view, social relationships in virtual spaces can also be seen as communities. Virtual communities on the Internet, as spaces completely separate from 'regions', prove that social relations can be formed without face-to-face contact.

In these communities, the degree of networking may be denser than that of traditional communities (Bradshaw, 2009).

As grasping the concept became slippery, studies on the community seemed to receive less attention from academia. Some scholars have argued that a community is no longer a valuable concept in understanding society (Stacey, 1974). Efforts to grasp the community as a substance have continued to be criticised. In the meantime, Cohen's (1985) research contributed to understanding many unexplained things related to the community. Using the term 'symbolic community', he explained that communities are formed within people's cognition, and the boundaries of communities are also distinguished within people's understanding. Cohen studied what community means to people and he interpreted the boundary of the community as being in the perception of people:

> *"Community exists in the minds of its members, and should not be confused with geographic or sociographic assertions of 'fact'. By extension, the distinctiveness of communities and, thus, the reality of their boundaries, similarly lies in the mind, in the meanings which people attach to them, not in the structural forms"* (Cohen, 1985, p.98).

Defining a community as a single clear concept does not help us to understand why it is widely used despite its ambiguity. The position that it is impossible and meaningless to define a community operatively is a fairly old view. Hillary revealed that in 1955, the only commonality in 94 community definitions was that they dealt with people (Hillary, 1955).

In this study, we will not try to find a single definition of the community. As Jewkes and Murcott (1966) argued, it would be more meaningful to grasp its meaning in the context in which the word is used, rather than trying to describe the community as a single concept.

> *"An understanding of what was meant by 'community' should be attained through review of its use, rather than searching for one definition"* (Jewkes and Murcott, 1996, p. 557).

Rather than the meaning of the community itself, I would like to find out what the community means in community resilience discussions and why it is mentioned in disaster resilience discussions. Jewkes and Murcott stated that:

> *"A tremendous amount of sociological energy was devoted over these four decades to such studies, yet the researchers did not succeed in getting much closer to an agreed and substantiated definition of community. It is not that whilst authors of studies in communities were not concerned with precise definition, their work inevitably required 'community' to be implicitly or operationally defined and this informed the study of community"* (Jewkes and Murcott, 1996, p. 557).

In the following section, we will look at why community words have emerged in disaster resilience in much of the literature.

2.3.2 The community concept in resilience literature

There are many works that use the term ‘community’ and ‘resilience’ together in the literature exploring disaster resilience (Tobin, 1999; Chaskin, 2008; Norris et al., 2008; Coaffee and Rogers, 2008; Cutter et al., 2008; Kirmayer et al., 2009; Magis, 2010; Burton, 2012; Berkes and Ross, 2013; Berkes and Ross; 2016; Imperiale and Vancly, 2016; McEwen et al., 2016; Asadzadeh et al., 2017; Pfefferbaum et al., 2017; Vaneeckhaute et al., 2017). The community is often mentioned when it comes to the ‘resilience of what’, and is understood in various scales within the literature. It sometimes means ‘social system’ (e.g. Adger, 2000); it is used to emphasise place-based resilience (ex. Coaffee and Rogers, 2008; Cutter et al., 2008; Imperiale and Vancly, 2016). The use of the term started from the assumption that the ‘community’ that confronts risk events should become the fundamental subject to build and develop resilience (Manyena, 2006).

Why, then, is the community the thing that needs to overcome disasters well and possess disaster resilience? This is a necessary and straightforward question, but few studies in community resilience literature mention what community is. As in the NHS campaign phrase quoted in the previous part, much community resilience literature often leaves the ‘community’ to be ‘something recognised or understood’ by each reader who encountered it. This study is ultimately curious about what enhances the community’s disaster resilience. However, I would first like to ask the question of what the community is. As the meaning of ‘community’ is often vaguely used, the direction of the point may be different depending on how the term is used in the resilience discussion.

> *“In conventional emergency management, communities are viewed in spatial terms: groups of people living in the same area or close to the same risks”* (Twigg, 2007, p.6).

As Twigg notes above, considering the risk factors of a disaster, ‘region’ is a subject of risk. When discussing the nature of community in the previous section, geographic proximity of community has come to be considered as less important. However, given that natural disasters are a risk factor affecting a particular area, it is necessary to consider ‘place-based’ factors in community resilience (Twigg, 2009). Local community is simply described as a group of people based on a particular geographical area. Such place-based or local-based communities have distinctions from non-place communities. Mutuality and shared experiences amongst people, which are emphasised by Tönnies, are notable in place-based communities. People with an accumulation of experiences, especially those of a crisis, are likely to have a distinctive emotion such as attachment or community spirit (Tobin, 1999). If an area is seriously damaged by a disaster like a flood, people in the area may be displaced from their residence temporarily

or permanently. They also need to share local evacuation facilities or use emergency resources together.

> *"The more important the shared event is to those involved, the greater the community bond … among people who experience a crisis together"* (McMillan and Chavis, 1986, p. 14).

There are many empirical studies in which the community played a positive role in restoring the region following disaster situations (Paton et al., 2001; Cottrell, 2005). The studies noted that neighbours or communities could provide immediate help at the sites of sudden and urgent disasters (Patterson et al., 2010).

However, the scope of this community, which may suffer from a disaster, is ambiguous. This is because the when and where of a disaster occurring cannot be accurately specified in advance. Marsh and Buckle (2001) note that people belong to a number of communities these days, but they are not always conscious of the communities they belong to. According to their argument, people belong to local communities of which they may not think they are members.

Then again, why is the community referred to as a 'subject' in disaster resilience literature?

First of all, it is an approach that describes the community as a 'set' to denote the opposite of the individual (Patterson et al., 2010). They believe that limited tasks can be accomplished better by collective-level actors, that is, communities. A series of sets considered to increase disaster resilience – such as in Aldrich (2012) and adaptability – can be formed, accumulated, and developed at the community level (Adger et al., 2005; Magis, 2010; Aldrich, 2012). In this approach, activities and programmes that improve relationships and social networks within the community are recognised as strategies to improve community resilience (Pfefferbaum et al., 2017). From a social-ecological point of view, resilience is a process of overcoming adversity within the human–environment system. As resilience extends to the community level, it focuses on how the characteristics of the community contribute to the collective process in the face of challenges and how resilience can be developed (Kulig, 2000; Kulig et al., 2008; Norris et al., 2008; Buikstra et al., 2010; Kulig et al., 2010). In many disaster resilience studies, community resources such as social capital, economic resources and social resources are considered as key factors in raising the resilience of the community (Smit et al., 2001; Chaskin, 2008; Cutter et al., 2008; Norris et al., 2008; Pfefferbaum et al., 2017). The term 'community' here means a group sharing local sources.

> *"'Community capacity' speaks to the community characteristics and mechanisms of action through which resilience is manifest. By 'community capacity', … the interaction of human capital, organizational resources, and social capital within a given community*

that can be leveraged to solve collective problems and improve or maintain the well-being of a given community" (Chaskin, 2008, pp. 70–71).

Another explanation comes from a way of defining resilience. As discussed earlier, there is a view in which disaster resilience is discussed as lowering the vulnerability of a population (Folke et al., 2002; Lopez-Marrero and Tschakert, 2011). This approach understands disaster vulnerability as a result of the comprehensive impact of individual, group or community characteristics. Evaluating vulnerability and identifying the factors affecting vulnerability are important issues (Smit and Wandel, 2006; Cutter and Emrich, 2006). The 'community' is discussed as a target unit to reduce vulnerability (Chen et al., 2006). Various policies and programmes targeting those who may be vulnerable to risk will be promoted as a way to increase resilience (Patterson et al., 2010).

Community is considered as a unit of social support. In the process of managing disasters, many local resources are required. In terms of using local resources, the target of support becomes a unit with a 'justification' to use social resources that must be approached as a 'set' rather than an individual. Potential vulnerable groups or generations affected by disasters, such as regions, become specific groups, namely communities (Weil, 1996; Tunstall et al., 2006; Chaskin, 2008; Lopez-Marrero and Tschakert, 2011). In crises, timely social support is referred to as a factor that enhances resilience (Berkes and Ross, 2013).

Furthermore, another argument is that the community's 'local context' is needed in disaster management (Vaneckhaute et al., 2017). The basis for these arguments is that communities based on places can consider community resilience as a 'context' related to the region. This community context arises after a long period of time.

"… are best understood as the result of transactions across multiple settings and levels of influence (e.g., cultural, historical, environmental, political) that change over time" (Gil-Rivas and Kilmer, 2016, p. 1319).

Because each community has a different background and experience, their requirements are different, and each community has different resources that can be used in crises. Therefore, a unified solution is not appropriate, and disaster management is required in different ways depending on the 'context' of the community (Pfefferbaum et al., 2017).

As an extension of this discussion, it is expected a community that can play a major role in governance. Community participation is considered necessary in improving resilience (Norris et al., 2008; Longstaff et al., 2010). Here, the community becomes a unit of collective behaviour (Chaskin, 2007). Much of the literature emphasising community participation has positive expectations for the community's empowerment process. The community can be very effective in identifying and demanding common issues and it can find ways to fulfil agreed goals on its

own (Cottrell, 1976). Empirical studies in which the community has dealt with various problems well in overcoming disasters are also being introduced (Benight, 2004). In communities with successful experiences, a sense of shared trust builds up, which fosters community competence. These positive processes are described as collective efficacy (Paton and Johnston, 2001; Chaskin, 2007; Norris et al., 2008; Patel et al., 2017).

Community is dynamic and complex. Community from a hazard perspective can be understood as a spatial term, a group of people who live in a geographically bounded area and have a likelihood of the same risks (Twigg, 2007). Cutter et al. (2008) pointed out that communities can have varying degrees of resilience within similar geographic places. Their study is to emphasise the dynamic nature of the community where people with very different backgrounds come together in the same place. Therefore, when discussing community resilience, the various attributes associated with the community must be considered together.

2.3.3 What the community is in South Korea

The meaning of 'community' has changed along with the times in South Korea. In recent years, the word 'community' has been used to a great extent, but it does not have any singular nature or meaning and may be considered to have multiple meanings. It refers to specific facilities used jointly or a group of people who share the same interests or a common living environment or an administrative district. As the concept of resilience has attracted attention in many different fields in South Korea, the term 'community resilience' has also come to be used. When this is mentioned in resilience theory, the community is referred to as the entity possessing the resilience. It is an important challenge to find out what this community is as a subject needing resilience. The first step is to see what the word 'community' means in South Korea. In this part, I will explain how the 'community' word is used in South Korea rather than how the word has evolved academically. In other words, I focus here on how the word is being perceived and used by ordinary people.

As discussed earlier, the nature and character of the community have varied in many ways as the characteristics of society have changed. In South Korea, the definition of the term 'community' is very different from one generation to another and is used in a wide variety of meanings in this age. Community is translated as '공동체', or '지역사회', or '커뮤니티' if used as a loanword in Korean. Although the two words are not semantically different[4], the latter word is now used more frequently than the previous word. The Korean language, Hangeul, can be used to express pronunciation in letters; many foreign words are written in Hangeul as they are pronounced. Many Korean people have a preference for the source of the language when they accept foreign words (You, 2004).

In South Korea, in the traditional society before modernisation, a community was a communal society with characteristics similar to those of *Gemeinschaft*, from Tönnies (Park, 2012). According to studies of rural or traditional communities in South Korea (Cho et al., 2004; Jung and Park, 2015), the traditional community was a relatively small scale one and had a clear geographical boundary. A society based on agriculture required collaboration, and people came together to work and form common organisations. Also, their own normative systems and traditions have been developed to strengthen cooperation for agricultural production. These communities were of a form based on face-to-face relationships and were closed but stable (Academy of Korean Studies, 2011).

[4] The Korean standard unabridged dictionary describes loanwords' meaning in Korean. According to the dictionary, the meaning is explained as follows: the community is a communal society created by regionalism. Residents have a common social notion, lifestyle, tradition and a sense of community.

There are several forms of communities in traditional society: *munjung*, a village commune (Duncan, 2000, p.45), *dure*, *gye*. *Munjung* refers to the entire male lineage sharing a single family clan and name by having a common ancestor. Households with the same surname sometimes formed a village. This type of same-surname village existed in a time when Confucian order was considered important, and the members shared Confucian cultural events such as holding a memorial service for their ancestors, educating family members, and managing common properties (Academy of Korean Studies, 2011). The village commune is a collective settlement of dozens of farming villages. This community gathered around cultivated areas. It is also a family-based local group and mutually supportive. *Dure* is a kind of farmers' cooperative group. It is a communal organisation through which farmers have tried to use their labour reasonably together when the demand for labour peaks in rural areas. It gradually developed into a comprehensive form that cooperates not only in farming but also in common issues in the village. *Gye* is a living community centred on the *dong* or *ri*, which were former administrative units. If damage occurs to the area induced by natural disasters such as floods or drought, members work together under the rule of the *gye*. These kinds of communities were almost destroyed by the Japanese colonial occupation and numerous wars. At this time, not only did many people have to leave their homes, but many of the existing properties and infrastructure were lost. However, these traces of the past have remained in some rural areas and have been partially reflected in the characteristics of modern communities (Hong, 2009).

Features of traditional Korean communities include kinship, geographical boundaries, cooperation and common solidarity. In modern society, on the other hand, a different form of community from the traditional one is being created. Although there are still some place-based communities, a geographical place is no longer a leading element to form a community. In the city areas, especially, place-based communities barely exist. High population density, which is one of the features of Korean megacities, would be a deterrent to the formation of local community in two respects. First, it is difficult for people to gather together with common interests or characteristics. Many people living in confined spaces all have different individualities: growth background, economic activity, personality, health status, academic background and living pattern. Second, apartments, which are the type of housing that accommodate high population densities, can make people more closed off. Residents living in apartments rarely meet their neighbours. In an apartment complex, there are only a few places – corridors, lifts and common porches –where people can meet others living nearby. The maintenance of the apartment is entrusted to a specific company, with the charge for it included in the management fee collected from each household. People who live in an apartment have little chance of meeting each other, and they have few opportunities to share their lives. That does not mean that there is no community in the metropolitan area. Modern people tend to form a common solidarity with others based on shared beliefs and values rather than on the

fact that they are based in the same area as others. Values such as norms and solidarity based on interaction between members are more emphasised than mutual help.

In today's society, a community based on a region has somewhat different significance from the previous society, whose community meant that its members share similar circles within a specific geographic space. In South Korea, small administrative units are considered as a community. Some plans and policies on the region by the government are made under the title of 'community'. Seoul has three kinds of administrative districts: *si*, *gu* and *dong*. *Si* is the same as the whole city of Seoul and has sub-districts of 24 *gus* and 423 *dongs*. Many plans on Seoul are established based on *gus* (Community Welfare plan 2011, 2014).

The community is difficult to define, but it is clear that it indicates a sort of collection of people. Pointing this out, Williams (1983) noted that the word 'community' is widely used because it appeals to those who want to experience belonging. Many development projects prefer to utilise the term 'community development' in South Korea. If you enter the keywords 'community development' or 'community plan' into Naver, the most preferred search portal site in South Korea, hundreds of thousands of news articles are searched. The numbers themselves retrieved may be not very meaningful because some of them duplicate and include articles that are less or not relevant; however, it is interesting that most community plans are about building common facilities or amenities. In these development plans, the community refers to building facilities that can be used by many people. In the sense that the community is a sort of affiliation, the fact that a facility such as a bank[5] that can be used by 'everyone' is called a community facility shows that the concept of community can also be used somewhat differently from its original meaning.

[5] The title of the article is 'Shinsegae, Developing community type shopping centre in Ilsan' (*Yonhap News*, 1994)

2.4 Community as an agent of disaster resilience

This part outlines an initial conceptual structure for the ‘community disaster resilience’ idea. The process of constructing a research framework is part of the overall design to address research problems. The framework is conjunctly related to the main research questions. The previous section is a general explanation related to concepts such as the origin and development of the terms covered by this study, while the content of this chapter can be seen as a theoretical framework for exploring the research questions raised.

The aforementioned questions are: 1) What are the critical factors in the community related to disaster resilience? and 2) What factors could affect community disaster resilience? This chapter explains what perspectives are needed to address the two main questions. The first question relates to what the nature of the community is. As previously mentioned, the word ‘community’ is used in a wide variety of ways without being clearly defined. Given the use of terms such as ‘virtual community’ (Castells, 2001), ‘post-place community’ (Bradshaw, 2009), and ‘community without propinquity’ (Webber, 1963), time and space constraints may also be considered unrestricted when discussing communities. Communities in relation to disaster issues may be defined simply, but somewhat imprecisely, as ‘collective people at risk of flooding’ (Coates, 2010). Much community resilience literature seems to assume communities of different scales. Since disasters affect a geographical place, it is common for communities, which are the subject of disaster resistance, to be discussed as communities based on the area. In the following section, I will look closely at these communities and see what characteristics of the community are discussed as a major subject of resilience.

Furthermore, the following section explains the main determinants of conceptualising community disaster resilience. Like the community, it is very challenging to conceptualise disaster resilience. Disaster resilience is described as a specific factor, such as the various types of capital available to the community (Chaskin, 2001; Aldrich and Meyer, 2015) and adaptive capacity (Norris et al., 2008), or from a holistic perspective, as some researchers have tried to describe it as an indicator (Cutter et al., 2008; Schipper and Langston, 2015). Considering disaster resilience as the capacity of the community to handle adversity well throughout the disaster (Gil-Rivas and Kilmer, 2016), it may have different factors that are considered necessary, specific to each stage of a disaster. Therefore, this study attempts to explain important factors by considering these stages, such as before (well prepared), during (well resisted) and after (well recovered).

The material covered in this chapter will be the criteria applied when investigating and analysing case communities in this study.

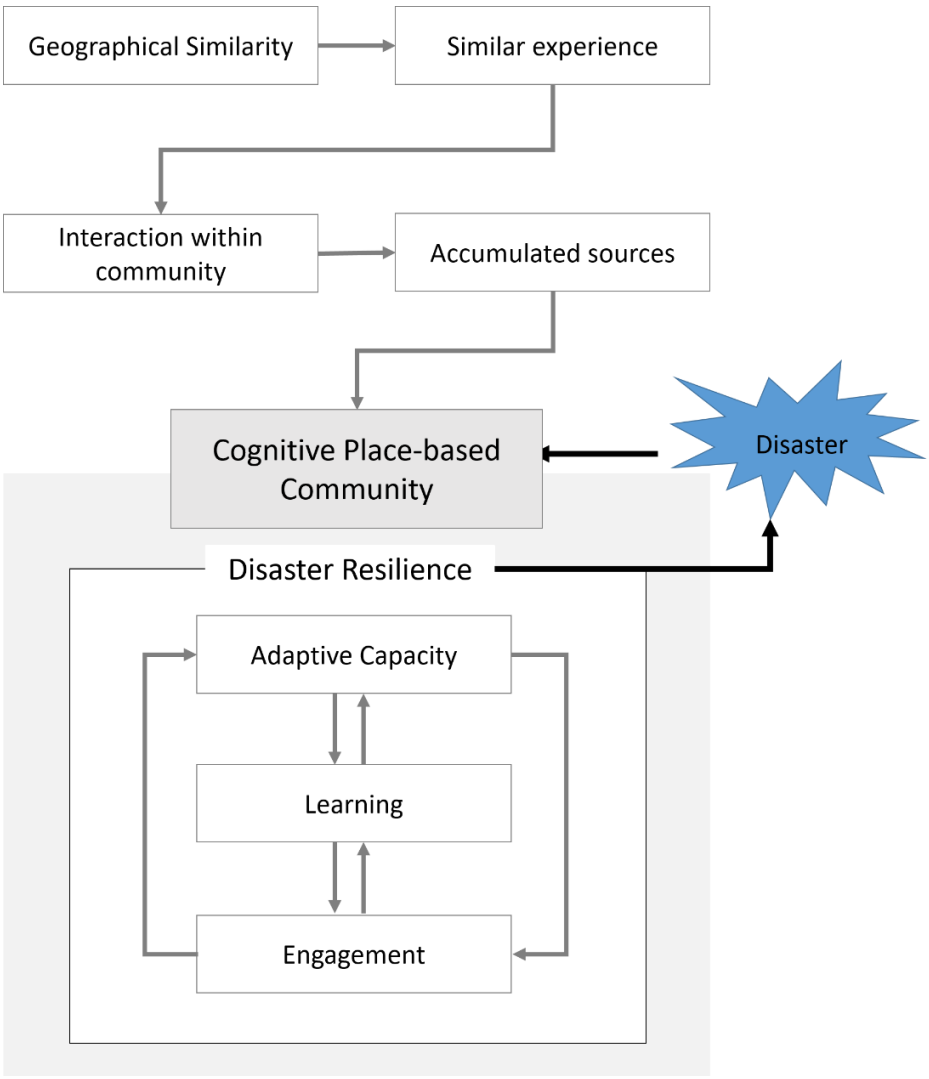

Figure 2-2 Conceptual framework

2.4.1 Characteristics that define local community

The term ‘community’ is used in various ways. Titz et al. (2018) plainly described the use of the word in a loose manner as ‘high level of use but low level of meaning’ (p. 2).

Much of the literature on community resilience seems to make the assumption that a community is ‘place-based’ (Maida, 2007; Norris et al., 2008; Berkes and Ross, 2013; Pfefferbaum et al., 2017). Although a community is considered an important agent in resilience discussion, there is inconsistency in the way some scholars who studied community resilience define a community. It is used as a unit of regional analysis (Berkes and Ross, 2016) or referred to as an administrative unit (Cutter, 2016; Berkes and Ross, 2016). However, using the term loosely may further confuse resilience in practical use (Titz et al., 2018; Räsänen et al., 2020). As Gao (2018) argues, subjects who want to operate the concept can define it according to their purpose.

Referring to community resilience in disasters is to expect community-based problem solving when dealing with disaster problems (Zebrowski and Sage, 2016). In the field of disaster management, local-based communities are discussed frequently without a separate mention of communities because natural disasters are a risk factor affecting space in particular locations and require location-based responses. This location specificity also suggests the need for different responses according to regional conditions and circumstances (Pfefferbaum et al., 2017). Furthermore, in much of the literature, the various community resources such as human, physical, economic and social capital are regarded as helpful in overcoming difficulties (Norris et al., 2008).

2.4.1.1 Cognitive placed-community

The community as an agent of disaster resilience covered in this study focuses on a place-based community. Since natural disasters affect people based on geographic places, a community that suffers from disasters includes the meaning of place. However, unless a community refers to an administrative district, it is uncommon to refer to a place-based community as having distinct geographical boundaries. The local community is often thought of as an ill-defined placed-community for people (Räsänen et al., 2020). A place-based community would address the question of whether a place may serve as a basis for cognition when people identify interpersonal relationships. Cognitive placed-community is the way that people think about bounded places and a community.

Cohen (1985), a prominent scholar who studied the concept of community in depth, argued that there are two fundamental ideas in the concept. The first idea is that the members of the

community have something in common, and the other is to differentiate them from the people in other groups. This is a feature that arises because a community has a 'boundary'.

> *"Community … seems to imply simultaneously both similarity and difference"* (Cohen, 1985, p. 12).

The common element in many of the studies tackling community terminology is that 'community' is a group of people connected by something in common such as the region, interests, concerns, problems, identity. If so, it is necessary to understand why people want to form a group, why this is important for people and how the group can be maintained. Scholars suggested that people's desire not to be isolated is a fundamental attribute of relationships with people. People feel secure in putting themselves among others (Esposito, 2010). Cohen studied what community means to people and he interpreted the boundary of the community as being in the perception of people:

> *"Community exists in the minds of its members, and should not be confused with geographic or sociographic assertions of 'fact'. By extension, the distinctiveness of communities and, thus, the reality of their boundaries, similarly lies in the mind, in the meanings which people attach to them, not in the structural forms"* (Cohen, 1985, p.98).

A feature of the community is that it has a 'boundary' (Cohen, 1985; Brent, 1997). According to Cohen (1985), this boundary does not only mean a geographic boundary; it may be tangible, such as an administrative boundary, but may also be a mental structure. The boundary of the community allows us to distinguish what the community is. As people assemble in a group, the boundary around the group takes on significance. The formation of a boundary implies a two-sided thing: some are included within the boundary, but others are not included (Cohen, 1985). People within the group are aware of differences from those who are not part of it (Cohen, 1985; Jewkes and Murcott, 1996); they may feel a sense of security (McMillian and Chavis, 1986) and bonding (Clark, 2007).

The clear criterion for distinguishing geographical spaces is the division by administrative districts. As discussed in the previous chapter, and emphasised here, a community cannot be divided into specific spaces. Local governments with distinct regional boundaries can make people aware of regional boundaries. Some studies refer to a community as an administrative district unit in studies on the subject of resilience. An example would be the use of a 'community' as a regional analysis unit, such as administrative districts or census classification. When using terms representing the characteristics of a certain region, such as vulnerability and resilience, the region's state is also objectively measured by indicating it (Cutter et al., 2010; Kang, 2014). However, a careful approach is needed in understanding or interpreting a community containing various populations as a homogeneous group (Titz et al., 2018). It is necessary to

acknowledge that the community is a variable and heterogeneous set of configurations. Just because a community is resilient to disasters does not mean that many individuals or classes in that community have high resilience. Considering a community as having homogeneous population collective characteristics may make various conflicting contexts within the community incomprehensible (Buggy and McNamara, 2016).

Local governments often refer to citizens within their boundaries as communities. Sometimes, specific issues can be classified as 'work within the boundary (community)' using the term 'community'.

> *"By working together with communities, we can build a stronger and safer city, and help residents tackle the problems that affect them the most"* (Newcastle City Council, 2022).

The above phrase shows that the community refers to a specific administrative district, but the word may make the area recognised as a set. The phrase 'warmly persuasive word' (Williams, 1983, p. 76) points out that the language may be used for deliberate purposes to gain public support or attention because it appeals to people (Mulligan et al., 2016).

These administrative boundaries cover various spatial scales from neighbours to districts. Since the division of administrative districts is carried out for the purpose of state governance, the scope of the administrative authorities' 'we' may vary significantly between the areas of 'we' recognised by the residents within the division. Therefore, those classified as such may not feel a sense of belonging to the community and are likely to feel that they have no connection with others (Marsh and Buckle, 2001). Neighbours may not be aware of each other. People within an area are classified into one category, but they may not know where they are classified.

Regardless of how a community is defined, it is important for members to recognise the community when the community is regarded as a main agent in disaster resilience. Some view the nature of a community as solidarity (Bhattacharyya, 2004), in which members should be able to identify whether they are part of the community (Bradshaw, 2009). 'Community identity' and 'sense of community' are terms derived from the emotional aspects of the community. Community members related by close relationships share common norms and circumstances, which make them feel that they belong and have an identity (Chaskin, 2008). Community identity allows members to understand their community and facilitate interaction to form a social network. In this process, social trust and social association through accumulated social networks foster social capital (Adger, 2003; Berkes and Ross, 2013), which is thought of as one of the important factors in community resilience.

The awareness that people are interacting with the local community requires a perceived sense of belonging based on the 'region' of members. A sense of belonging refers to

connectivity to where one belongs (Bradshaw, 2009). The characteristics of the community, which are considered to be related to resilience, such as place attachment (Vale and Campanella, 2005; Tartaglia, 2006), sense of community (Chaskin, 2008) and social capital (Adger, 2003), can be initiated by 'members being conscious of the community'.

2.4.1.2 Interaction in community

As described at the end of the section above, the affective aspects of the community are closely related to the boundary's characteristic. Adler (2014) notes that humans are social beings. It is also said that human beings are social creatures or animals. Social interaction is very important for humans. Relational groups such as the community may be necessary for humans.

The concept of community does not mean a group that shares only a geographical space, but one that also shares something in common such as cultural values, history, trust, activities or interests (Waterton and Smith, 2010). Individuals want to be connected through continuous communication with others, and they want to feel valued as a member of the group (Patel et al., 2017). Because of the desire of these people, they want information about others' experiences and want to create relationships with people who have the same interests. Since humans can be characterised as fundamentally establishing social relationships, mutual relations are necessary for conceptualising community (Delanty, 2003).

Many social changes have weakened the explanatory power of geographical location-oriented community conceptualisation (Wellman, 2001; Delanty, 2003). This change also led to an academic mainstream that described the community as a 'network connection' (Bulmer, 1985; Wilmott, 1986; Wellman; 2001). Although the approach to the community moves from geographical place to person and explains it from a different perspective in terms of relationships between people, it is similar in that it tries to interpret the community as 'people' and 'interactive action'. Fundamentally, this may be because the nature of the community requires a relational explanation of people. It can also be seen that the definition of the community includes 'interactions' between people or networks (Cater and Jones, 1989; Crow and Allen, 1994; Hunter, 2018).

It is often discussed by including 'geographical' elements within the community concept discussed in the disaster regulation literature. However, even when defining local or place-based community, 'bringing people together through a particular location' alone is insufficient to conceptualise community in disaster risk management (Räsänen et al., 2020).

This study is interested in why 'community' is regarded as the default terminology in the context of disaster risk (Titz et al., 2018). In general, the community is considered a regional

unit or the subject of dealing with disaster issues. In the latter case, community-based problem solving is expected (Klein et al., 2003).

Communities have characteristics that are regarded to make them more resilient to disasters, which will be discussed in further depth in the next sections (in section 2.4.2). Many of these features are closely related to things that are created as a result of the interaction of community members, such as relationships, solidarity, intimacy and bonding (Putnam, 2000; Drury et al., 2009). Some of the research is concerned with the processes and ways by which people who are experiencing adversity can help and encourage one another. According to Buckle (2006), those who are involved in social networks have a firm foundation from which to seek aid when they are faced with a tough situation. It has also been demonstrated through empirical study that communication and engagement between people can boost the chances of social-friendly behaviours such as sharing resources among people or assisting one another in times of need (Gil-Rivas and Kilmer, 2016). Some researchers believe that derivative effects such as social capital and social relationships within communities can help communities become more catastrophe-resilient in the long run (UNISDR, 2012; Pfefferbaum et al., 2017). Social capital is also conceptualised as a product of interactions between people who live in a certain community (Putnam, 1995; Adler and Kwon, 2002). It will be challenging to include all the multifaceted characteristics in the community concept (Buggy and McNamara, 2016; Titz et al., 2018). Räsänen et al. (2020) argued that how a community is conceptualised may affect the evaluation of community resilience. As they contend, it will be different to evaluate community resilience through social capital (interaction-based community) and the extent of participation (community of practice and interest) (Räsänen et al., 2020).

To reiterate, alluding to a community as a general place-based community in disaster resilience literature without a supplementary explanation will add to the confusion in the practical application of the concept. In the disaster resilience discussion, the community is the subject of practical strategies related to disaster management (Paton and Johnston, 2001; Folke et al., 2002) and an active agent (Magis, 2010; Brown and Westaway, 2011). The community as an agent is an actor with various capacities (Patterson et al., 2010; Manyena et al., 2011), which can come from members' interactions within the community. Therefore, 'interaction' needs to be addressed when conceptualising a community in the discussion of disaster resilience.

This feature of the community is closely related to building community resilience. Magis (2010) included the word 'engagement' in the definition of community resilience, emphasising that intervention plays an important role in enhancing community resilience. Campanella (2006) also argued that place attachment created by participation in social networks could increase disaster resilience. In addition, it is a kind of virtuous circle to strengthen resilience: engaging

in disaster issues could create a kind of sense of unity, which leads to increased cohesion among members, and in turn, the coherence of the group becomes a driving force to strengthen community resilience (Ross, 2014).

2.4.1.3 Accumulating community resources

> *"[We consider a community as] A locality comprised by people residing in a geographical area; the resources such people require to subsist and progress; and the process in which such individuals engage to distribute and exchange such resources to fulfill local needs and wants"* (Vaneeckhaute et al., 2017, p. 739).

Amongst the community resilience literature, the approach to conceptualising resilience with 'resources' will be most noticeable (Norris et al., 2008; Pfefferbaum et al., 2017).

A community has various tangible and intangible resources that can be utilised in disaster situations (Manyunga, 2007). Tangible resources and technical support, such as evacuation sites, food and emergency kits, are essential for minimising damage in the event of a disaster. Apart from these types of resources, intangible resources such as social, economic and human resources are also important to determine disaster resilience. A place-based community shares local sources that are believed to be necessary to strengthen resilience, such as human capital, social capital, economic capital and physical capital (Magis, 2010). Researchers who emphasise community resources suggest that community resilience depends on collective efforts to improve their resources and effective use of abundant resources (Norris et al., 2008; Gil-Rivas and Kilmer, 2016).

The research conducted by Norris et al. (2008) is one of the studies that looked very closely at the relationship between community resources and community resilience. They focused on how several resource sets contribute to improving resilience as a collective process. The set of community resources they presented is as follows:

- Economic development: essential resource bases – e.g. stable employment, affordable housing, and access to schools and health services – can be linked to social vulnerability. The volume and diversity of resources can affect community resilience.

- Social capital: the existence of an interactive and supportive organisational network. Moderately overlapping (redundant) networks may increase the resilience of the community. Networks with well-formed social capital can make decisions in a cooperative manner.

- Information and communication: the importance of reliable and accessible information. In an emergency, accurate information can help people make the right choices. In the process of overcoming disasters, effective communication between various stakeholders plays an important role in overcoming crises well.

- Competence: the ability to solve common problems. It is expected that the community can work effectively and collaboratively. This is also related to community self-organisation and self-efficacy.

According to Norris et al. (2008), these sets of resources and three attributes of resources – robustness, redundancy and rapidity – combine to influence community resilience. Robustness is the strength of resources, which is unlikely to deteriorate. Redundancy means the degree to which resources can be replaced. The more diverse the resources, the higher the redundancy may be. The last attribute is rapidity, which refers to how quickly resources can be mobilised in a crisis.

After all, boosting the community's resources and increasing resource mobilisation are critical to improving community resilience (Lin, 2001; Norris et al., 2008; Mayer, 2019). Increasing the mobilisation of resources is related to cooperative behaviour within the community. In particular, social capital, which is regarded as one of the most essential resources of resilience, can be accessed and mobilised through communal relationships (Lin, 2001; Aldrich and Meyer, 2015). Collective and cooperative efforts are required to allow various subjects to develop substantial resources in order to increase community resilience (Gil-Rivas and Kilmer, 2016). Furthermore, in order to deal with the problem, it is vital to collaborate with a wide range of actors. It is critical that they make effective use of the resources they already have, but it is also critical that they build a cooperative system that allows for the timely and appropriate importation of vital resources from the outside.

Summary of section

The following schematic provides a summary of the characteristics of the community as an agent of disaster resilience. A community in a region that plays a role or has the capacity to overcome disasters in disaster resilience should be a specific subject, and whether the people in the region recognise the community may become significant.

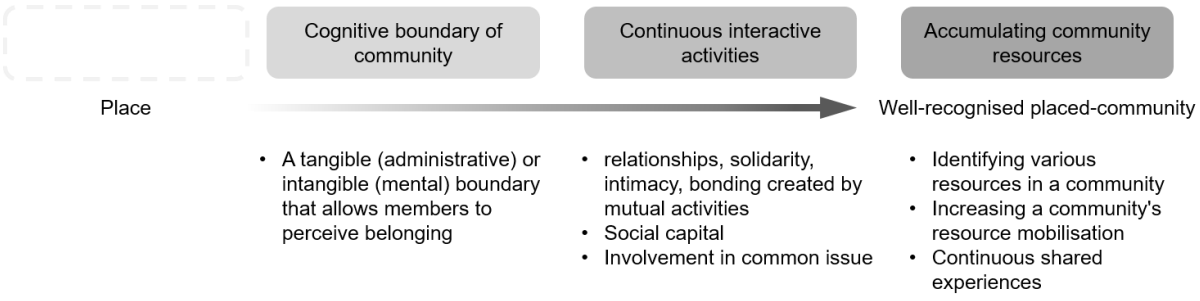

Figure 2-3 Factors that make a place recognised as a local/placed-community

2.4.2 The dimensions of community disaster resilience

The purpose of this study is to identify factors that are important for building and improving communities' resilience. Then, there is a need to address what it means for a community to be resilient in the wake of a flood disaster. However, it is not easy to define this. Although the word 'resilience' has grown in popularity, there is no clear agreement on its definition yet (Klein et al., 2003; Manyena, 2006). Summarising many works in the disaster literature, disaster resilience can be explained by two aspects: a set of a community's capacities (Folke et al., 2005; Manyena, 2006) and a series of processes (Castleden et al., 2011; Pfefferbaum et al., 2015). Resilience refers to a set of capacities to respond and overcome severe events in the face of disasters (Cutter et al., 2008; Norris et al., 2008; McEwen et al., 2016). Increasing or having resilience does not mean that a community has reached a certain safe state or has achieved all outcomes. Resilience should be viewed as a series of continuously changing processes (Paton and Johnson, 2001; Berkes, and Ross, 2013; Ross, 2014). The definition of building disaster resilience spans several deliberate actions by a community to deal with threatening risks related to disasters throughout the process: pre-event, during and post-event. Furthermore, communities overcoming adversity can prepare for the next disaster based on previous experience.

Resilient communities are considered to have the capacity to deal with possible hazards from disasters before, during and after them (Cutter et al., 2008; Norris et al., 2008; Gil-Rivas and Kilmer, 2016). Before a disaster, the capacity to mitigate risk and prepare for future risk; during a disaster, the capacity to be less affected by the risk; and after a disaster, the capacity to recover sufficiently to the original function or state. Disaster resilience literature is concerned with community factors affecting these capacities.

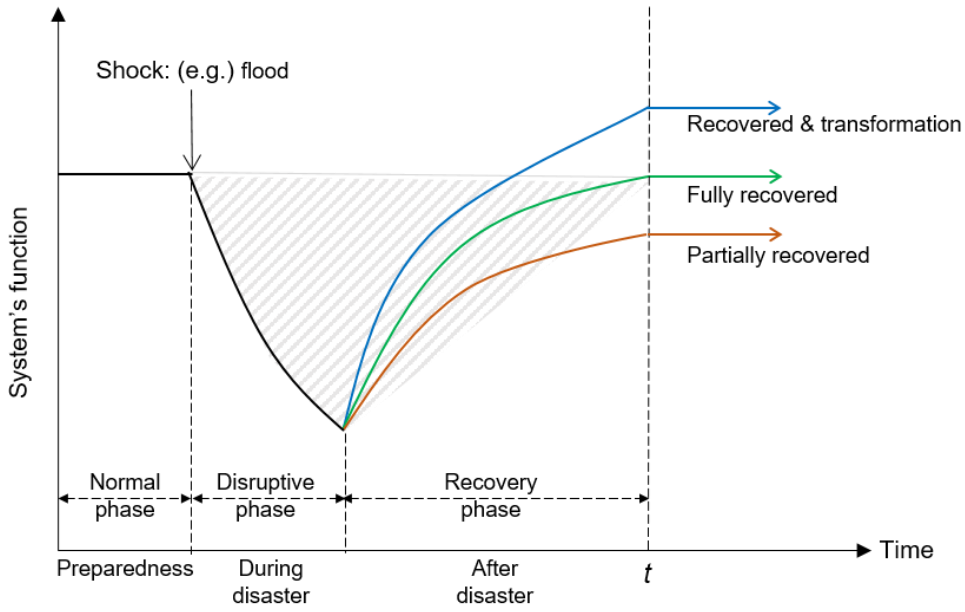

Figure 2-4 Resilience curve
(Source: re-drawn by author; adapted from Sarker and Lester 2019)

The above graph (Fig. 2-4) is a straightforward representation that is used to give an outline of infrastructures' resilience in engineering. The curve in this graph shows the process of changing the function of the affected system. Disaster resilience may vary over time, as shown in the graph. When the human system is in a normal state without external stimuli, it prepares for disasters. At this time, measures and activities are taken to reduce the adverse effects of disasters (Godschalk, 2003). However, as an external stimulus, a disaster occurs, and the state or function of a system changes. The stronger the flood intensity, for example, and the lower level of preparedness of the stimulated human system, the lower the curve. It is believed that factors such as network diversity (Aldrich and Meyer, 2015) and resource redundancy (Norris et al., 2008) can act as a kind of buffer zone that absorbs the risk – reducing the magnitude of the hazard. After the disaster, the immediate threat is over, and the system recovers from the impact. Compared to the pre-disaster state, the system may be in a partial/full recovery or transformation depending on its capacity to do so. A transformation, expressed by the blue curve, means that the system makes the crisis an opportunity to develop further than the previous state, which is a similar concept to the bounce forward concept of Manyena et al. (2011). Resilient states refer to all three states: well prepared, less affected by impact (disaster) and as short as possible. In the graph above, the inverted triangle shape (in light grey lines) that occurs when the graph line goes down then up makes the area smaller and the resilience high.

Pre-disaster

Before the disaster, disaster resilience refers to the extent to which a community is well prepared for unexpected external disturbances. This includes proactive measures to prepare for disasters and minimise damage from floods (Ross, 2014).

The risk awareness of community members is an important factor in building disaster resilience. Cognition can lead to behaviour, so perception of flood risk in a community can raise awareness of the necessity for disaster preparedness (Miceli et al., 2008). In other words, the higher the perception of risk within a group, the greater the collective interest in solving problems related to flood risk. Also, prior knowledge of risk coping, such as what action should or should not be done when a hazard occurs, and where the shelter is located, should be shared within the community.

During disaster

It is important for the community to be as resistant to the impacts of disasters as possible while affected by disasters. In this context, disaster resilience is defined as the amount or capacity of the affected system to absorb external disturbances (Timmerman, 1981; Walker et

al., 2004; Cutter, 2008). A resilient community means that it can maintain its functionality while absorbing sudden shocks.

Post-disaster

The meaning of 'bouncing back', which the word 'resilience' itself has, makes this word popular in many areas. A system which suffers from a disaster should be able to quickly return to a stable state. It is also defined as the ability to regain or maintain essential functions required for human living (Walker and Salt, 2006). Since the external affected system may not return to its original state, the term resilience means more than restoring to a state before being affected. The fact that a system fails to return to its original state means reaching the threshold, but it also means having a chance for a new transition (Adger, 2006). Tobin (1999) noted that recovery from disaster means a long-term process encompassing rehabilitation. As this approach, which views recovery as an opportunity for change, is connected with the discourse of community sustainability over the long term, it is discussed whether the community can continue and develop over time while overcoming threats (Gunderson and Holling, 2002; Berkes et al., 2003).

What is emphasised in this approach are the system's capacities for self-organisation and learning. Some scholars defined resilience as the degree to which a complex system can self-organise and the extent to which the system can build learning and adaptive capacity (Carpenter et al., 2001; Folke et al., 2002). Lessons learned from experience can improve the community's capacity to adapt to the future risk.

Many diverse factors have been proposed to reduce the area of this triangle; learning and adaptive capacity (Carpenter and Gunderson, 2001; Klein et al., 2003; Folke, 2006), diversity (function – Adger, 2000; member – Norris et al., 2008; culture and economy – Chapin et al., 2009; resources – Norris et al., 2008), community networks and social capital (Adger, 2005; Aldrich, 2012; Pfefferbaum et al., 2017; Mayunga, 2007), involvement and governance (Folke et al., 2002; Pendall et al., 2010; Berkes and Ross, 2013), self-organisation (Carpenter et al., 2001, 2008; Chaskin, 2009). This study focuses on factors considered as community disaster resilience: social capital as a community resource, engagement, and learning and adaptive capacity.

2.4.2.1 Adaptive capacity

Adaptive capacity is seen as an important element of the resilient system. Although there is a lack of general understanding of the conceptual relationship between resilience and adaptive capacity, it is worth noting that adaptive capacity is a notion intended to describe the uniqueness of the human system (Chapin et al., 2009). In terms of academic development, the notion of regeneration began with explaining engineering or ecosystems, leading to the subject

of investigating human–ecosystem mutual systems. Many study endeavours have been undertaken to bring resilience into practical use as research on human society has expanded. However, gaps in SES research have emerged that are difficult to explain from the perspective of existing studies. The lack of a firmly agreed upon definition of the resilience concept has made it even more difficult to put it into practice. Meanwhile, perspectives were presented to find the cause of differences in the characteristics of human system characteristics (Dover and Handmer, 1992), about which Walker et al. (2004) explained that because humans are intentional and competitive actors, this specificity allows humans to predict and evaluate the environment, as well as reflect on future behaviours (Archer, 2000). The concept of 'adaptation' describes this combination of processes for predicting, anticipating and reflecting on human behaviour (Folke et al., 2010). Human systems with adaptive capabilities are thought to be capable of dealing with environmental perturbations as well as evolving into states of change or transformation in the process (Smit and Wandel, 2006; Magis, 2010). This notion is related to the bouncing-forward concept developed by the research team of Manyena et al. (2011). According to these arguments, humans can have the potential to 'bounce forward' as well as 'bouncing back' by possessing reason or learning. Humans anticipate and actively adapt to change through various human systems such as conventions, regulations and institutions. In other words, these enable human 'deliberate behaviour' to predict, plan for and prepare for hazards. Intentional decision-making is linked to the learning process and is thought to improve adaptation (Folke et al., 2005; Gunderson, 2010).

The relationship between resilience and adaptive capacity can be understood in a variety of ways, depending on how resilience is defined. Gallopín (2006) viewed the two concepts similarly. According to him, this capacity is the inherent potential of both ecological and human systems to adjust to environmental crises, and the improvement of adaptation ability results in an increase in resolution. Adaptive capacity is also regarded as a component of resilience as a quality of the social component of the SES (Folke et al., 2003; Bosher et al., 2007). Some argue that adaptive capacity is stated as a feature that, along with the concept of vulnerability, represents resilience, but also as a result of lessening the vulnerability (Manyena, 2006). Vulnerability is defined as a state in which a social system is vulnerable to harm (Cutter et al., 2008). This concept arose from a discussion of climate change, a global and long-term risk factor, and stemmed from the argument that it is vital to recognise external elements that increase risks in the approach to the risk factor itself. Natural hazards and human settings – construction environments, physical environments – are interconnected to cause disasters in the case of natural disasters; thus other risk-weighting elements, rather than basic risk factors, may be decreased (Godschalk, 2003). It is stated, in particular, that socially induced vulnerabilities should be taken into account in disaster risk management (Blaikie et al., 1994). In this context, improvements in social determinants, such as reduced inequality, may result in

a reduction in vulnerable groups who are likely to be at risk, hence reducing the amount of the impact at risk. Many times, techniques to reduce vulnerability have also been found to be beneficial in dealing with catastrophe risk, and numerous attempts have been made to link the two concepts to explain them (Klein et al., 2003; Cutter et al., 2008).

However, other research on the process of disaster recovery has revealed that communities with very low vulnerability achieve better outcomes in disaster recovery (e.g. Akter and Mallick, 2013), implying that lowering vulnerability does not necessarily increase resilience. This also implies that vulnerability and resilience may not have an inverse connection. That is not to say that vulnerability is unrelated to resilience. Vulnerability is a notion that is conceptually related to risk factors; hence, it cannot be entirely dismissed when considering catastrophe risk resolution. The crucial thing to remember is that the question of 'resilience for whom' should come first. Resilience varies depending on the target. Even in disaster-affected places, people, communities and countries can respond in quite diverse ways. Furthermore, a high level of community resilience does not ensure a high level of individual resilience as a group.

There are numerous viewpoints on the relationship between the two notions, but it seems obvious that both vulnerability and community resilience are associated with the need for an approach based on a fundamental understanding of the area. As noted previously, the concept of 'community' in disaster resilience is often centred on a community based on an area (Maida 2007; Norris et al., 2008; Cutter et al., 2010), and the necessity for an approach that takes the particulars of the area into account (Folke et al., 2005; Vaneeckhaute et al., 2017). The vast number of case studies in community resilience research may also show that general explanations are difficult to come up with (Schelfaut et al., 2011).

It is important for the community to be as resistant to the impacts of disasters as possible while affected by disasters. In this context, disaster resilience is defined as the amount or capacity of the affected system to absorb external disturbances (Timmerman, 1981; Walker et al., 2004; Resilience Alliance, 2005; Cutter, 2008). A resilient community means that it can maintain its functionality while absorbing sudden shocks.

To manage flood risk effectively, a community needs supportive relations within and between organisations.

The various resources of the community can be used to withstand disasters. The extent to which a community has resources may affect its capacity. The size and diversity of the available resources and the flexibility of resources to make good use of resources at the moment of crisis are critical in responding to a disaster (Ross, 2014). It is also important that people have information about the resources available in a disaster situation.

2.4.2.2 Learning

The concept of resilience arose alongside complexity theory (Bahadur et al., 2010; Davoudi, 2018), and resilience cannot be understood by isolating the system from the outside world. The system is continually interacting with its external environment and it is believed that these complicated relationships are difficult to describe. It is suggested that the system is subject to external effects, and that external disturbances and changes are a natural process of the system, and that disaster, one of the perturbations in the human system, is also unavoidable and should be considered (Norris et al., 2008). Some researchers suggest that when the magnitude of the external perturbation is not large enough, the system does not have the opportunity to change or transform (Gallopín, 2006; Gao, 2018). External disturbance, according to the resilience debate, is a type of event in which expectations fail, and this failure can be a valuable learning opportunity for the human system (society) undergoing change (Wildavsky, 1988; Lorenz, 2013).

Learning is thought to be an important component in improving adaptive capacity and resilience (Dovers and Handmer, 1992; Folke et al., 2005; Gunderson et al., 2010). Some scholars defined resilience as the degree to which a complex system can self-organise and the extent to which the system can build learning and adaptive capacity (Carpenter et al., 2001; Folke et al., 2002). According to UNISDR (2005), social systems can be resilient when they have the potential to learn from disasters and improve mechanisms that limit the possibility of harm from future hazards. The concept of self-organisation is intimately tied to learning ability (Nelson et al., 2007). Self-organisation is a notion that aims to explain the qualities of complex social-ecological systems, implying that order within the system is formed by constructive interaction within the system rather than external management (Gao, 2018). This notion also applies to explaining social systems (Lorenz, 2013), and some argue that resilience is a self-organising process (Berkes and Ross, 2013).

Learning is a process that leads to the development of sensation, anticipation and information acquisition, all of which contribute to the development of adaptive behaviour in society or the community (Walker et al., 2006). Humans or societies that are learning subjects, according to this viewpoint, are intrinsically rational thinkers who will learn from their previous experiences and use those lessons to make better decisions or operate in a more effective manner in the face of future hazards (Berkes and Folke, 2002).

In the issue of resilience, knowledge includes both local and highly professional technical knowledge (Manyena et al., 2011). It also deserves attention, since learning has the potential to effect changes in non-human actors such as institutions, measurements or skills, as well as people and communities (Pelling and High, 2005). This study, on the other hand, seeks to focus on community-oriented regional knowledge rather than technical expertise. Experience

of failure is also an inevitable process, and as the community passes through a period of ‘modest failures’, it will be better prepared to deal with potential ‘catastrophic failures’ (as cited in Gao, 2008, p. 16).

There is a research topic that looks into ‘flood memory’ (Krause, 2016; McEwen et al., 2016). In flood risk management, it is suggested that ‘lay knowledge’ of flood-affected citizens is important in addition to expert knowledge (McEwen et al., 2016). The argument that flood memory can contribute to flood disaster management as local knowledge is related to the belief that there is a beneficial association between transplanting risk and disaster preparedness (Micelli et al., 2008, p. 14). According to certain studies, flood disaster experiences may influence individual disaster preparedness levels, such as insurance subscriptions (Zaleskiewicz et al., 2002). According to them, local community knowledge should be incorporated into flood risk management decisions, and this is the process of improving adaptation described in the resilience literature. McEwen et al. (2016), on the other hand, observed that social shifts such as nuclear familiarisation and increased mobility result in fewer possibilities for place-based learning across generations in society. Fanta et al. (2019) published an interesting study on flood collective memory, comparing the time of significant floods near the Vltava River in the Czech Republic with that of new settlements to discover how long intense flood memories last in the community. Their findings revealed that people’s memories of major floods did not persist for two generations, and that information that is not repeated frequently enough is not in the community’s memory, causing people to forget the lessons that the community needs to learn. As a result, it was proposed that there should be a continual procedure of recording and informing people about the adverse consequences of flooding.

Many aspects of community have been impacted by the changing nature of society. The advancement of information and communication technology, for example, has rendered the boundaries of accessible places obsolete, and people can now communicate with those who live far away (Castree, 2004; Brickell and Datta, 2011; Mulligan et al., 2016). Furthermore, as a result, the characteristics of communities based on distinct ‘location’ have eroded, and a community can form anywhere. There are several virtual space-based societies that communicate solely via the Internet. This can also explain people’s proclivity to belong to multiple groups at the same time. As people get ‘choosier’ about communities, it becomes easier to join and leave them. This phenomenon is made easier by communication technology that spans geographical boundaries. With a single click, users can voice their ideas such as consent or disagreement, purchase or refund, participation in or withdrawal from a group, and so on, anywhere they have access to the Internet. As a result, certain communities may have contingent traits (Delanty, 2003; Mulligan et al., 2016).

The ‘contingent’ feature of the community may hinder learning ability. Learning is a crucial factor in community resilience in terms of facilitating adaptive capacity for the future from previous experiences (Norris et al., 2008; Kulig et al., 2010). When it comes to community learning, the discontinuity of intra- and inter-community properties would be problematic. So, the community may be contingent (McEwen et al., 2016). Communities can be created temporarily during a disaster. McEwen et al. (2016) pointed out that the contingent nature of the community is a challenge in communicating the experiences and knowledge of the local generations.

2.4.2.3 Engagement

> *“A sustainable community selects mitigation strategies that evolve from full participation among all public and private stakeholders. The participatory process itself may be as important as the outcome”* (Mileti, 1999, p.6).

Multiple ‘participation’ is regarded as an essential determinant in resilience discussion (Folke et al., 2002; Magis, 2010; Lopez-Marreto and Tschakert, 2011). The government is normally in charge of disaster management, but government-led disaster management is usually standardised and implemented (Becker et al., 2015). UNISDR (2005) recommends community participation during a disaster, as it is thought possible to make decisions that fulfil local requirements because communities are the best agents of comprehending the circumstances in their area (Dovers and Handmer, 1992; Folke 2006). There is widespread consensus that effective disaster management must begin with a thorough grasp of the area (Chaskin, 2007; Berkes and Ross, 2013).

Social capital is the concept that emerges together in community participation in disaster management. Many experts believe that there is a positive correlation between social capital and resilience enhancement (Adger, 2003). As can be seen in the definition below, social capital is seen as a key aspect in community engagement.

> *“Social capital refers to the ability and willingness of community members to participate in actions directed to community objectives, and to the processes of engagement”* (Magis, 2010, p. 407).

Social capital is a significant resource in the community (Manyena, 2008; Magis, 2010; Aldrich, 2012). Scholars who support the positive benefits of social capital point out that, as previously described, social interactions lead to collective actions within society (Putnam, 1995). Potential communal resources are seen to play an essential role in helping one another (Mayer, 2019). Members of a networked community communicate relevant information and offer assistance to one another, allowing them to effectively deal with crises such as natural catastrophes (Aldrich, 2012). Adequate social networks and community support strengthen

community cohesion, which leads to increased community resilience (Rolfe, 2006; Norris et al., 2008).

Because existing social links manifest as supporting behaviours in crisis situations, social capital is highlighted as an important aspect of community in a disaster event. Empirical research has shown that persons who were more strongly connected to social networks could more easily acquire the assistance and information they required throughout the catastrophe recovery process (Aldrich, 2012). Strong links are vital as well, although a follow-up study by Aldrich et al. (2015) reported occasions in which important information was transferred in crisis scenarios, even in relatively weakly connected relationships referred to as bridging social capital. They contended that a government-funded effort to improve social relations would eventually elicit community opposition, since social capital may be produced or may deteriorate.

Many stakeholders are involved in the process of overcoming disasters. Relationships that were not well recognised before the crisis – between many organisations such as volunteer groups, non-governmental organisations (NGOs), rescue agencies and local governments – must act to achieve the same aim. The current networks depicted in crisis circumstances, according to Norris et al. (2008), are 'loosely connected but cooperative systems' (p. 143). Organisations relied more on existing relationships in circumstances where rapid decision-making was required in their research, emphasising the necessity of loose but trustworthy partnerships. Fielding and Anderson (2008) have noted that the existing local network manifests itself in the form of social assistance at times of distress.

The accumulation of involvement experience in the community improves community resilience (Folke et al., 2002). People can discover their shared concerns and express their diverse interests during the involvement process (Folke et al., 2002; Ross, 2014). During this participative process, individuals occasionally examine their identification within the context of the community's relationship. This is referred to as a sense of community by Perkins et al. (2002). Furthermore, self-definition emerges in the location to which one belongs, which is referred to as 'place attachment' (Tartaglia, 2006). As a result, it is considered that community participation reinforces the emotional ties formed by members in respect to the community (Vale and Campanella, 2006, Norris et al., 2008).

A study conducted by Silver and Grek-Martin (2015) analysed tornado-affected communities in Canada and discovered that shared disaster experiences in communities resulted in shared strong solidarity, which raised community awareness. This sense of community also acted as a personal motivator for some people to participate in the healing process. The sense that people were linked by 'what has happened' show that they had an incredibly positive psychological role in the disaster's recovery. As a member of the community,

emotions such as comfort from others can help to reduce the negative emotions (Hewitt, 1997) that may arise when dealing with disasters, such as isolation and loneliness.

2.4.3. Placed-community as the main agent for disaster resilience

As the definition of terms becomes more complicated, there has been a tendency for academic discussions on community to be reduced. The nature of community seems to be changing faster than the speed of the debate intended to define it. Academia has yet to define this subtle word clearly, but the community words are very popular and widely used, but very vaguely (Day, 2006; Barrett, 2014). Ambiguity in the definition of community may be due to changes in the attribute of 'place' in the community sense.

There was a time when 'place' as a geographical location was an important factor in defining the community (Tönnie, 1955; Cater and Jones, 1989). For the community, now referred to as the traditional community, the locational 'place' has become a relatively clear boundary separating the community and, simultaneously, becoming a spatial basis for community activities. It was meaningful to explain the interrelationships of people within spatial boundaries. However, it has been quite a while since the scope of people's activities has been limited by geographical space constraints. To describe a community as a relationship between people (Day and Murdoch, 1993; Bradshaw, 2009), makes it clear that many such constraints are disappearing from the formation and existence of communities (Delanty, 2003; Larsen et al., 2005; Clark, 2007). The development of various technologies and media accelerates the pattern of change and affects how people interact (Castells, 2001; Larsen et al., 2005; Bradshaw, 2009). Some scholars discussed the community and tried to explain it as a change in the nature of place (Rheingold, 1994; Bradshaw, 2009), while others tried to explain this change around people's relationships (Wellman, 2001; Wittel, 2001; Larsen et al., 2005).

As the sentence '*Places are not necessarily communities*' (Bradshaw, 2009, p.5) implies, more and more academic discussions have been made to separate geographical spaces from people's relationships. Attempts to separate locational places in the community sense can also be seen in several terms that refer to communities that have changed from traditional communities. Some scholars have expressed the weakening importance of the locational meaning in the community, such as 'post-place community' (Bradshaw, 2009), 'loss of place' (Day, 2006) and 'death of distance' (Cairncross, 2001). These discussions are also intended to explain modern communities distinct from the characteristics of previous models of community. Still, as the term suggests, it can be seen that the changed attributes are being explained around place. In other words, a variety of views on a community are setting place as a reference point and discussing it. As Clark (2007) described as 'romanticized attachment' views that regard traditional communities as ideals, these discussions seem to reflect the desire for the kind of positive abilities that people's networks create, such as intimate relationships, trust, interaction, community consciousness and social capital between people in close spaces.

There are several reasons why it is difficult to separate places from the concept of community. First of all, although the importance of the meaning of the locational place has been weakened, this does not mean that the locational community has disappeared. People still have place-based social interactions. Since face-to-face interactions have not disappeared, people often need clarification when explaining the concept of community that encompasses them. Besides, locational places still significantly impact individual identity (Cohen, 1985; Barrett, 2014; Titz et al., 2018).

The public administration area is an institution that actively utilises the concept of the local community as a geographical location (Mulligan et al., 2016; Titz et al., 2018). Geographical boundaries are the unit basis of public administration. Local people, who are consumers of public administration, are given a sense of locational belonging by their address. The public often represents the administrative jurisdiction's residents with a locational identity as the local community. The term community can be very easy to use for political purposes by creating a sense of common belonging in the jurisdiction (Williams, 1983).

From a bottom-up, rather than top-down perspective, the community refers to citizens and the public. It is sometimes regarded as a subject of governance. Governance emerges as an alternative to vertical and inflexible government (Folke et al., 2002). There is a need for an agent that makes governance bottom-up decisions, and the local community is often regarded as an eligible subject. The local community contrasts with government-led, higher and lower bureaucratic methods, and the community's engagement is considered an alternative way to make rational decisions that enable horizontal and multifaceted participation (Durodié, 2003; Pfefferbaum et al., 2017; Vaneeckhaute et al., 2017). Participation and consensus are essential factors in the concept of governance. A community means groups, not individuals, so it can be an efficient concept that meets the 'multiple' condition required by these concepts. Participatory governance often requires local communities as regional agents (Eversole, 2011; Maclean et al., 2014). Also, particular capacities such as local knowledge, place identity and social capital are often described as that which local agents can create (Tobin, 1999; Cabinet Office, 2008; Norris et al., 2008; McEwen et al., 2016; Mayer, 2018).

However, as people's engagement is emphasised as governance, the local community tends to be vaguely given a status as a role player without defining who the local community is (Chandler, 2014a, 2014b; White and O'Hare, 2014). Criticism has been raised that the government is passing on to the community the responsibility for problems that the government cannot solve on its own under the plausible governance title (Chandler, 2013).

This trend also appears to be the same in the discussion of disaster resilience (Mulligan et al., 2016). Community is a subject that can give the context of 'local', and it can be easy to move on to other subjects without discussing what a community is. The definition of community

is mentioned as the subject of disaster resilience with ambiguity in the community resilience literature (Pendall et al., 2010; Berkes and Ross, 2013). The Resilience Alliance (2005) argues that areas experiencing disasters need to have resilience Natural disasters are a regional risk factor, so a spatial frame of a region is needed for discussion. Disaster management requires different goals and activities for each state of disaster stage (Blanchard, 2007). Decision-making and resource utilisation in the right place at the right time to minimise the adverse effects of disasters are considered necessary (Longstaff, 2005; Norris et al., 2008; Cutter et al., 2010). Some areas within the boundary become local disaster management units and are also regarded as one of the main bodies of decision-making roles in disaster governance. In this respect, regions are often referred to as local communities. Much resilience literature explains that community elements, such as social capital and common bonds, can work effectively to deal with disasters well. Risk awareness, local knowledge and learning that enable risk preparation are considered essential factors in enhancing the adaptive capacity of the region in resilience (Dovers and Handmer, 1992; Folke et al., 2002; Klein et al., 2003; Resilience Alliance, 2005; McEwen et al., 2016). However, in disaster resilience literature, community terms are used vaguely, referring to various actors who need different roles.

In Korea, apartment complexes are often referred to as apartment communities. The same is true of academia, and many studies explore community formation and community factors, such as social capital and community consciousness in apartment complexes as a community unit (Choi and Jang, 2002; Im et al., 2003; Seo and Ha, 2009; Jung et al., 2015). In modern society, place-based communities are difficult to explain. In most cases, the country's administrative division will be a geographical community with clear boundaries (Coates, 2010). The community intrinsically creates belonging and exclusion; apartment complexes can be relatively clearly divided into two space categories by the residential area. Research on apartment complexes and communities anticipates that residents' identities forged within their living spaces as 'apartment residents' can be effectively captured (Kim and Kim, 2001; Chun, 2001; Nam and Shin, 2005; Jee et al., 2014). However, the word 'community' has multiple layers of meaning (Mulligan et al., 2016), and people may belong to multiple communities simultaneously. This prompts the essential question of how residents perceive this place-based community – the apartment complex – shaped by an unnatural and artificial boundary that defines their sense of belonging.

There are residential complexes in other countries similar to Korean apartment complexes. However, it is rare worldwide that residential complexes are continuously created throughout cities in that particular form. However, in the 1990s, complex-type residences called gated communities were created throughout various regions in the United States. These complexes began to be built in the form of closed residential areas with the purpose of ensuring communal safety. Some social scientists focused on how community activities occur in these areas

(Blakely and Snyder, 1998; Low, 2015). As these communities control outsiders and can only be used and shared by people living in the complex, residents have a great desire for and satisfaction from belonging and exclusion (Blakely and Snyder, 1998). On the other hand, there was also a view that such complexes might create problems, in that they could deepen spatial and social inequality (Vesselinow et al., 2016). Some studies on these residential complex areas are interested in how communities are formed or residents' relationships, such as attachment to places and belonging (Kim and Kim, 2001; Yim et al., 2003; Kamalipour et al., 2012). Kamalipour et al. (2012) found that spatial separation from the outside strengthens some ties between residents. However, empirical research on governance amongst residents in these residential complexes is insufficient, and Low (2015) also noted the negative impact of these closed-type residential complexes increasing restrictions on use of public resources.

Apartment complexes in Korea are different from gated communities in the United States. In the United States, some upper classes aim to segment space for security. In Korea, package forms spread out widely in urban areas as a more preferred type of housing. Although apartments are a representative type of housing in Korea, there are few studies on how residential environments that artificially increase homogeneity affect people. In Korea, it is necessary to empirically examine whether the local community can work well in residential complexes.

Most communities are too decentralised and with open boundaries, and people lead lives outside the geographic areas in which they reside (Berkes and Ross, 2013). However, given clear geographical boundaries like the Korean complexes, it is worth checking whether residents can recognise their residences as local communities and whether they can display their capacities that enhance disaster resilience with their neighbours in difficult situations such as disasters.

2.5 Conclusion

This chapter reviewed the flow of research on the concepts of community and resilience, the two big themes of this thesis. This chapter became the theoretical rationale for recognising the problem in this paper, and the contents covered here will serve as the criteria for the following research.

This chapter focused on a community that is considered a significant agent in disaster resilience literature. As the concept of community is used in a very comprehensive way, empirical research on the idea has become more important. The interest of this thesis is to examine how communities hinder or exert resilience in flood disasters in the case study areas. In this thesis, the following contents can be confirmed in the case study areas. Section 2.4 is the research frame. The three factors for defining local communities covered in section 2.4.1 will be the basis for discussing local communities in the case studies. Community resilience is an ability to allow the community to minimise the negative impact of disasters by preparing to prepare, withstand and overcome disasters. The factors covered in section 2.4.2 are emphasised in disaster resilience literature as important to enhancing community resilience in disaster situations: adaptive capacity, learning and engagement. These factors are not independent but interconnected. Adaptive capacity is the ability to cope with external stressors and can be cultivated through learning. Engagement is an important factor in enhancing adaptive capacity by enabling local (communities) to raise awareness of shared problems and make better optimal decisions. Focusing on these factors, I will examine the process of undergoing the major disasters that the case study areas experienced in 2011. Section 2.4.3 uncovers the basis for the existing literature and why this thesis paid attention to the local community, the default subject of disaster resilience. When dealing with disasters as various regional issues, it was confirmed that the local community was mentioned as an agent. In Korea, housing types with clear regional boundaries are sometimes referred to as local communities. However, there was insufficient empirical evidence on whether particular housing types were recognised as local communities.

Chapter 3. Research methodology

3.1 Introduction

This chapter describes the methods of data collection used in this research. Research methodology is a systematic strategy that determines how a study will be conducted to produce answers to research questions. 'Research methods' refers to all the methods or techniques used while undertaking the study (Kothari, 2004). Researchers require much thought to get answers to the questions presented. The process of choosing the appropriate method is not simple. Researchers must constantly think about what information should be collected, how to analyse the collected information and how to interpret the analysis results. Since research methods should be determined by the specific research questions (Marshall, 1996), this chapter will discuss the questions and methods used to find the answers. It also discusses potential research issues and how to cope with them. Furthermore, at the end of the chapter, limitations on the methods used in this study are presented.

There are two primary keywords that are significantly difficult to define in this research: 'community' and 'resilience'. The purpose of this study is to identify the characteristics of these two words and to determine whether these characteristics would be relevant for building and enhancing community disaster resilience. Since resilience is a process concept and an integrated perspective, it is necessary to identify diverse factors that determine resilience at various levels and draw a whole picture of resilience. In this chapter, I would like to describe what process this study went through to answer the questions covered.

In the following sections, this study explains the evidence using case study methods, the extensive data collection methods for case studies and the methods of analysing the collected data. In section 3.3, descriptions of the case target site and location selection criteria are presented. And the last section, 3.4, presents the limitations and problems that may arise from the method used in this study and examines how to overcome them.

3.2 Methodologies

The method used in this study is qualitative. Decisions on what method to use are very closely related to the questions covered by the study. The aim of this study is to explore the determinants of community disaster resilience, and both major keywords are concepts that are not as easy to grasp. In both ‘community’ and ‘resilience’, multiple factors are intertwined in a complex relationship, so it is impossible to grasp the substance with a single theory or explanation. A qualitative research approach that asks many questions about ‘why’ and ‘how’ may be more appropriate than a stochastic quantitative approach to dealing with topics with these overly complex mechanisms (Cleland, 2017).

The primary research approach is a case study. It is possible to understand the complex relationship of a range of factors (variables) related to the case (Yin, 2009). The disaster event covered in this study is the flood that occurred in Seoul in July 2011. According to official data released by the government, 16 people died and 51 people were injured (Choi, 2020), and there was also a lot of property damage. Two of the areas affected by the flood were selected as case study areas. The explanation of the reasons for selecting the case area will be dealt with in more detail later.

First of all, to explain how this study was conducted, the research questions and the sub-questions that make up those questions are introduced. This study has two main research questions. The first is whether the characteristics of a community can determine its resilience. The following are additional questions to further explore the main question.

Q 1-1) What is a community? (Is there a difference between the community as a disaster response agent and the community that people recognise?)

Q 1-2) What are the characteristics of communities associated with disaster resilience?

Q 1-3) Do different types of communities have different characteristics?

The second question concerns which factors of a community are essential to make a community resilient. The following sub-questions seek to further detail the issue:

Q 2-1) What role did the community play in the event of flood disaster?

Q 2-2) Does each community have different ways of coping and recovering from floods?

Q 2-3) Can a community learn and evolve based on experience that has overcome the crisis?

The data collection method and analysis lead to four phases, depending on the research question. The first phase is a preliminary step to conduct a study involving a comprehensive investigation of the case area using the following secondary data: investigation into how heavy

rain events have affected the case study area for several years, the extent of damage to the 2011 Umyeon mountain flood landslide and the issues raised. The second phase is to investigate the community in the area subject to the case. This is the step of collecting inclusive information on the case study areas using secondary data; this process identifies gaps in information to be obtained from fieldwork. The third phase is the field research stage, which is acquiring information on the community, experience of flooding and risk awareness through field visits and interviews. The last phase is an analysis step that synthesises and interprets the data obtained from the previous steps and extracts meaningful topics. The overall research flow is shown in Fig. 3-1 below.

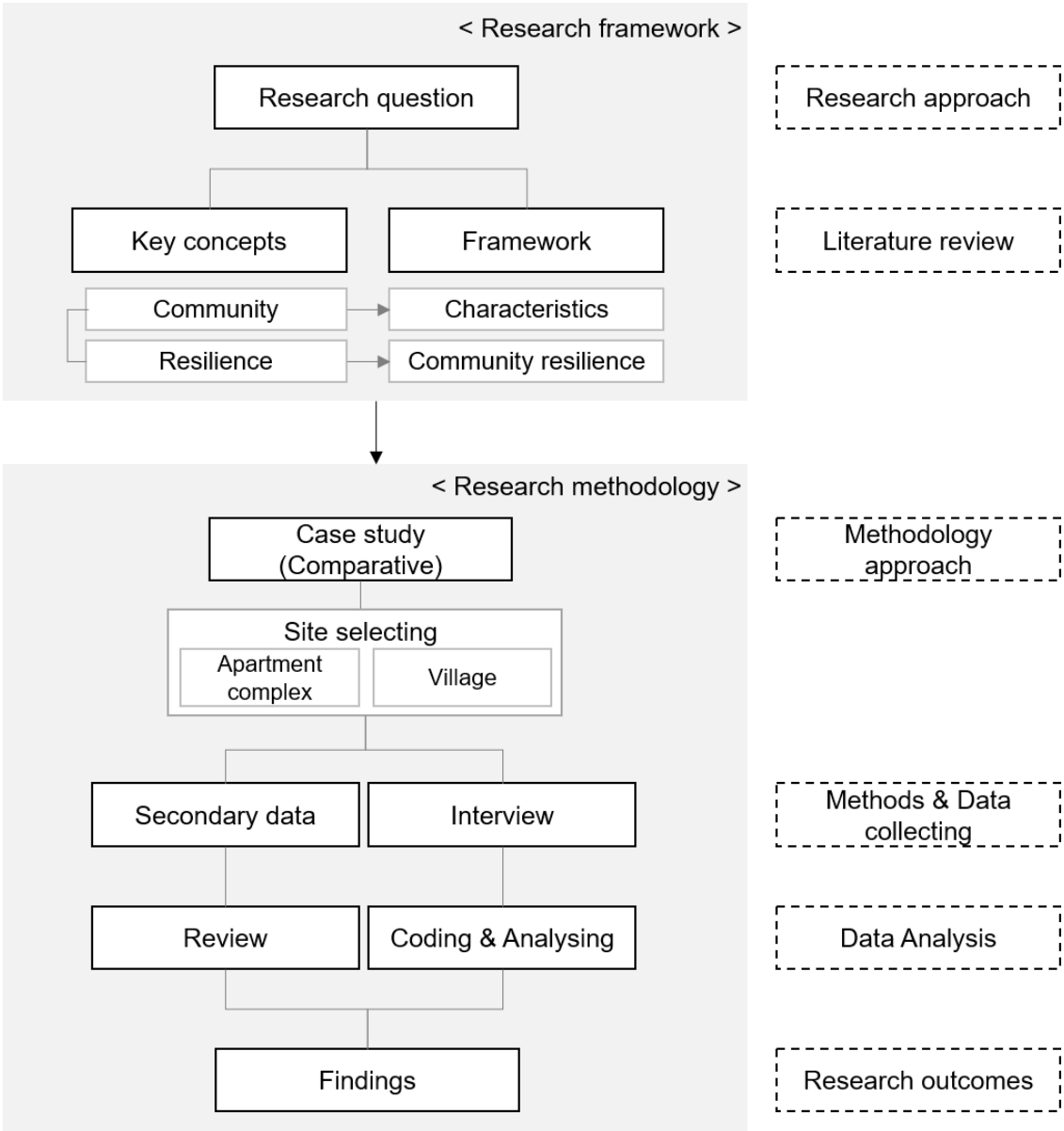

Figure 3-1 Research flow and research methodology

3.2.1 Case study

This research will take the form of a case study on the characteristics of the community in South Korea to explore how communities can build resilience to flood disasters. The reason for the case study is that the concepts of 'community' and 'resilience', which are the main subjects of the study, are not suitable for revealing general understanding. These two concepts are not only difficult to define in general, but they should be understood as a dynamic phenomenon that is determined by many factors (Ross, 2014). Both concepts should be examined in a comprehensive and multifaceted way. For May (2001), it is argued that the more complex the content, the more useful the case study may be. Researchers can find out the 'how' and 'why' of research questions as a case study method that approaches the case in depth and in multiple facets (Yin, 2009).

By clearly determining the boundaries of the analysis unit, the scope of data collection and analysis related to the research topic can be clarified (Yin, 2009). The cases of this study are two regions affected by the massive flood landslide disaster that occurred near Umyeon mountain in Seoul in the summer of 2011. In this study, it is essential to look at specific examples of local communities, as the starting point is to investigate whether the community can possess appropriate resilience. Since natural disasters affect the region, it was necessary to investigate local communities. Studies exist demonstrating that the form of residence can affect the formation of local communities (Chun, 2001; Seo and Ha, 2009; Jung and Choi, 2012), and this study also attempted to investigate this.

The two areas suffered the same disaster but are different types of residential areas. One area is an apartment complex, and the other is where low-rise houses form a village. The most significant difference between the two areas is the type of housing. The reason for choosing these two areas is to reveal the characteristics of the community by comparing different types of housing. This study selected a subsequent area as a representative residential type: a village consisting of low-rise residential houses and an apartment complex as local community units. The reason was to empirically check whether the form of a residential complex as a unit was becoming a local community, as most of the housing supply in large Korean cities has recently been developed in the form of residential complexes, which is a collective unit of apartment buildings. As will be explained in more detail later (section 5.3), about 60 years after the first apartment complex was established in 1962, more than half of the population in large cities now lives in apartment complexes. In addition, a contrasting area, Jeonwon Maeul, consisting of a low-rise residential complex, was selected as a comparative unit. Jeonwon Maeul was created in the 1980s, similar to the current supply method of apartment complexes; the village was created as a residential complex due to the specific development project. Apartment dwellings in Korea are developed in a unique form as complexes (Park, 2013), and

one complex consists of several similar structures and types of buildings, and are made to be clearly distinguished from other complexes (Gelézeau, 2007; Yang, 2017). As mentioned in the literature review chapter, if the local community is viewed as a product of accumulated mutual activities between people in geographically adjacent areas, the spatial form of a residential complex may enable various mutual activities amongst residents based on geographical proximity. In particular, since apartment complexes are made in a form that can be distinguished from spaces outside the complex, the common characteristics of the same complex may also create a space-based identity or bond for residents. Complexes are separate units with common local problems such as the use of public spaces and waste disposal, and may also be a basic unit of problem solving. Both of these areas are located near Umyeon mountain and suffered the same type of disaster damage when the landslide occurred in 2011.

With high-rise apartments becoming a representative residential complex in large cities such as Seoul, I looked at how local communities can be formed and function in apartment complexes. In comparison, although the size and number of residential areas are decreasing (Seong, 2017), I am able to check for the existence of a community based on the area of a district of detached houses, where inhabitants are considered to have a better mutual relationship with neighbours than in an apartment complex (Jung and Park, 2015). It was expected that the characteristics that stand out could be revealed when comparing the two communities.

It is useful for comparison that these regions experienced the same disaster. By examining and comparing the damage and the process to overcome the disaster of the two areas in detail, I tried to identify common or contrasting problems. Problems that emerged when an unexpected disaster occurred, factors that made the impact of the disaster more serious and changes that occurred in the area after experiencing the disaster were explored. Through this research process, I could find out what factors cause or hinder the two areas, or communities, from having disaster resilience.

In addition, I investigated Seocho-Gu, a local government administrative district to which the two case study areas belong. The administrative district to which the two areas belong is also an urban area that suffers from repeated flood problems every year. Local administrative areas are often used as proxies for local communities. Much of the disaster management is carried out by the government. Various actions by local authorities regarding disasters can affect community resilience. Regarding the 2011 disaster, I would also like to find out what role the local government played in the case study areas and how it affected the local community. Many government policies use local authorities as a basic unit. In many plans and policies called community policies, local authorities become units and performers at the same time. I

checked whether Seocho-Gu, the administrative division to which the target sites of the case studies belongs, could become a community unit. I investigated whether local people recognise the boundary of Seocho-Gu as a local community and whether local governments play a role as a local community in the disaster field.

3.2.1.1 Selecting cases

The research focuses on Seoul in South Korea. Korea experiences flood disasters annually due to the concentration of precipitation, especially in the summer months from June to August. Government authorities, policymakers and many specialists in Korea have become concerned about flood disaster management. Although there have been many efforts to prevent floods or reduce flood damage, floods have continued, and risks caused by floods have not diminished (Shin et al., 2011). Hence, the disaster management field has recognised the limitations of the existing management approach (Shin and Park, 2014, 2015) and has been considering different approaches. Disaster resilience is a promising concept in Korea. Nonetheless, the resilience concept has not yet been utilised in the area of disaster management, while in countries such as the United Kingdom and the United States it is used as a planning framework for disaster management (Subcommittee on Disaster Reduction, 2005; Cabinet Office, 2011). Furthermore, 'resilience' has not been translated into common Korean in most disaster literature (Ha et al., 2014). Given that there may not be a concept that exactly matches the original word in Korean, the translation of one word into several words even in the same field may reflect that semantic agreement has not been reached. In order for the concept of resilience, which has already been criticised for its ambiguity (Manyena, 2006; Klein et al., 2003), to be utilised more, it is necessary to clarify some of its usage. The issues that need to be made clear are closely related to what this research intends to identify: what community disaster resilience means; what resilience means in regard to community disaster; what factors determine whether a community is resilient to disaster; and how resilience is built, strengthened and weakened.

3.2.1.1.1 Outlines of areas

There are two reasons why this study focused on Seoul. The first reason is that Seoul is a weather-related risk-weighting area. Not only does the city suffer from heavy rainfall every year, but the highly dense city is also far more dangerous than other areas. Seoul is the most densely populated and developed city in South Korea. According to the Seoul Metropolitan Government's statistics, the population of Seoul was 10,068,381 in the third quarter of 2018. This figure shows that about one-fifth of the Korean population lives in the limited land space of 0.6% (605.24 km^2) of the total area. The second reason is that this big city is an area in which various forms of place-based communities can be identified within one city. This study

will compare different types of communities. Thus, the criteria for choosing case areas are important. In this regard, it is likely that other influencing variables that may occur due to regional differences will be controlled by selecting the objects to be compared within a single region.

As mentioned earlier, this study will select two types of administrative districts as cases of communities. To explain the background of selecting the case areas, it will be helpful to describe how administrative areas are arranged in South Korea. The administrative districts of Korea are divided into various units as representing the authority of governmental agencies. These divisions are sometimes split up by administrative purpose intentionally but are generally determined by the proportion of the population. Seoul has three kinds of administrative districts: *si*, *gu* and *dong*. *Si* is the same as the whole city of Seoul and has sub-districts of 25 *gus* and 426 *dongs*. Fig. 3-2 shows the administrative district system of Seoul. The areas divided by dark coloured lines are *gus* and by lighter lines are *dongs*.

Figure 3-2 Administrative districts in Seoul

As stated above, this study will compare communities of different scales. The research will be able to compare how the conditions and characteristics of each community affect their disaster resilience against flooding, and select one place (*gu*) where the frequency of flood damage is relatively high in Seoul as an analysis object area.

Gu

The administrative districts (*gu*, *dong*), are the primary regional unit of government and municipal planning. In the studies of community resilience conducted by various researchers (Kang and Jo, 2013; Ha et al., 2014), the *gu* was used as an analysis unit. This administrative

borough has some degree of autonomy. The heads of the local authorities are subject to local elections. The *gu* is the largest type of unit to be targeted in this study. Seoul has 25 *gus*. One district has a population of approximately 100,000 to 500,000, with an area of 30 to 40 km^2 .

Place-based community similar to village or neighbourhood

There are cases where villages or communities are formed in areas with a similar resident environment, such as multi-family housing complexes, terraced houses or apartment complexes. There are also examples of village communities in Seoul that are designed so that residents may voluntarily solve common problems. Such cases can be found at the Seoul Community Support Centre. The centre was originally established by some people who had thought that a community network was necessary for the development of the community, and it became a corporation by being committed to support communities in the city of Seoul. Its key role is to support community projects led by residents.

3.2.1.1.2 Exploring place-based communities in Seoul

The community may not be recognised as a single common concept. It may also be controversial in determining which form of community is most appropriate to respond to disasters. However, in order to discuss building resilience, identifying the 'resilience of what' is one of the priorities (Davoudi, 2013). A community is considered to be an important agent of disaster resilience in disaster management. Thus, the research will compare different kinds of communities. By comparing several types of communities, their similarities, differences and unique features can be identified.

This study uses two different types of residential areas as case areas. in addition, I will examine the possibility of Seocho-Gu, the administrative district to which these two case study areas belong, being a local community. Communities able to prepare and cope with disasters are classified into two types: *gus* and a kind of village or local residential community. The first reason for selecting a local government unit is because autonomous entities are regarded as communities, even though they are administrative districts. Although those districts may be somewhat large as a local community unit, many plans and strategies related to disaster management are made on the local basis of *gus* and *dongs*. Furthermore, these local governments have public human resources and financial resources and offer public services to their residents. On the other hand, the smaller local communities that will be mainly explored in this study are local units similar to a village or neighbourhood. These two case study areas can be said to be closer to the 'local community' considered in the preceding study to this research. Although both areas were created by development projects, some homogeneity, such as proximity to certain geographical locations, similar types of residence or the need for community, may act as factors for people to gather or interact with. Given that flood damage

is not correlated with artificially created geographic boundaries, especially those of an administrative district, this category of community may be appropriate for more field-oriented crisis response. However, that is not necessarily so. It may also be less relevant to flooded areas.

These are areas where flood disasters have occurred more frequently than in other regions over the past few years. Moreover, these areas include regions designated by the local government as Disaster Risk Districts. The local government of Seoul designates hazardous regions as Disaster Risk Districts annually for special management.

3.2.1.2 Case study areas

3.2.1.2.1 Site selection: which gu will be the case study area?

Selection criteria

As will be explained in further depth in the following chapter (section 4.2), flood damage caused by heavy rain frequently occurs throughout Seoul. This study focuses on one administrative district out of 25 *gus*. According to Article 12 of the Natural Disaster Countermeasures Act, the autonomous government designates and manages areas where disasters occur repeatedly or areas deemed likely to occur as Disaster Risk Districts (National Disaster and Safety Portal, 2019). Table 3-1 shows the number of districts designated as such in 2017 by *gu*. In other words, amongst the 25 *gus*, only areas designated as Disaster Risk Districts are presented. Such districts may be de-designated if it is determined that the risk factors of the zone have been improved or disappeared due to the special management of the relevant area by the competent local authority, so the number of designated areas may vary annually.

Table 3-1 *Gus* divided into disaster risk areas in 2017

(Unit: number of districts designated)

Gu	Flood risk district		Collapse risk district	
	A grade	C grade	A grade	B grade
Jongro-Gu	-	-	-	1
Yongsan-Gu	1	-	-	-
Yangcheon-Gu	1	-	-	-
Gangseo-Gu	2	1	-	-
Seocho-Gu	2	-	2	-

A grade: areas with high risk of human injury from in the event of a disaster
B grade: areas where damage to buildings has occurred or may occur in the event of a disaster
C grade: areas where damage to Infrastructure has occurred or may occur in the event of a disaster

This study focused on Seocho-Gu, one of the *gus* that frequently suffered flooding disasters. The number of endangered *gus* disproves the notion that Seocho-Gu is more frequently flood-damaged than other regions. Seocho-Gu was also ranked as the highest in Seoul based on the area of flooding damage (Shin et al., 2011). In order to investigate the communities that suffered from the flood disaster in detail, this study tried to select a place where a single weather-related event affected several areas. Heavy rains near Umyeon mountain in Seocho-Gu caused considerable damage to many areas in 2011. Two of the affected areas were selected as case study areas. The research selected one *gu* and chose smaller communities within it. In order to compare cases, it is desirable to control as much of the other attributes as possible, except for the comparison criteria. Therefore, choosing cases within the same *gu* can make other conditions that might cause flood disasters similar, such as being similar distances from rivers or having similar climatic conditions.

The two residential areas selected for research cases were Namtaeryeong Jeonwon Maeul (hereafter Jeonwon Maeul) and Banpo Raemian Arthill apartment complex. Fig. 3-3 below shows that the two areas are located to the north and west from Umyeon mountain.

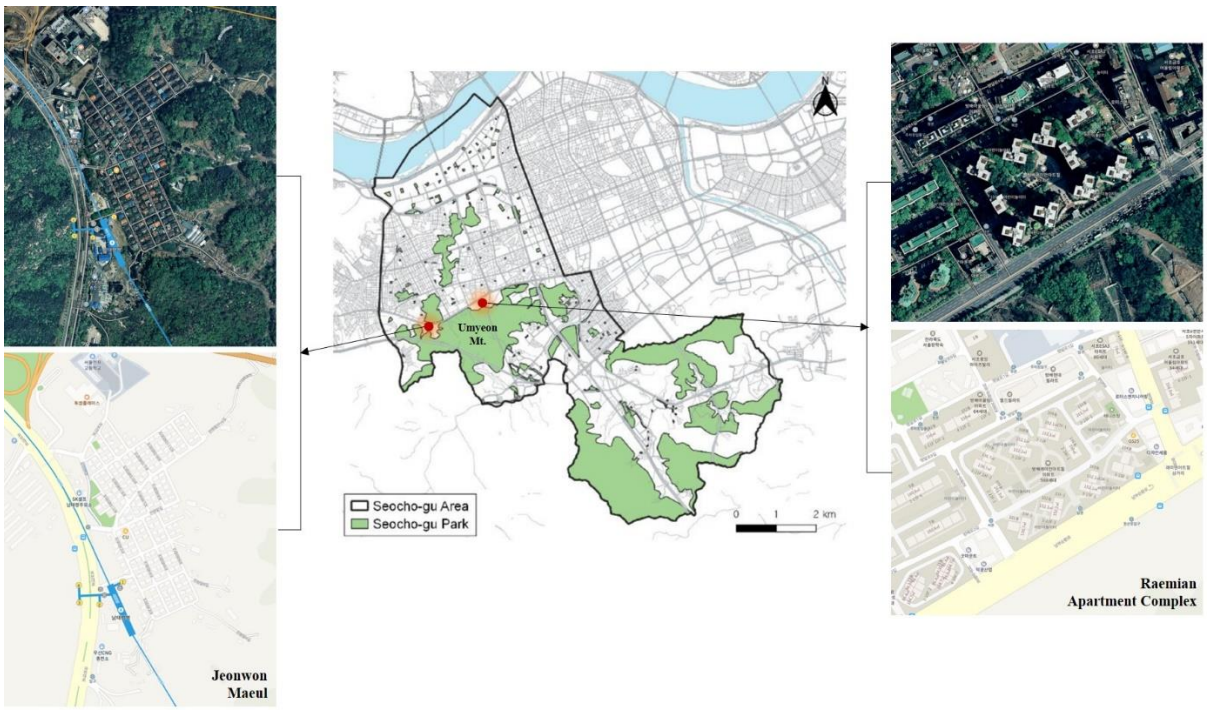

Figure 3-3 Location of the study sites within Seocho-Gu and satellite photographs
(Source: redrawn by author, adapted from Park et al., 2021)

3.2.1.2.2 Overviewing case study areas

Banpo Raemian Arthill apartment complex

The Raemian apartment complex was developed for 588 households in ten buildings (17~24 floors) in 2004. The *Banpo Sora* apartment complex of 561 households in four buildings, which was completed in 1979, has become the current complex due to the rebuilding project (Son, 2000). Construction began in August 2001 and was completed in 2004. The complex is in Bangbae Dong, Seocho-Gu as the administrative district. Apartment units, which are generally traded at approximately £25,000[6] per 3.3m^2 as of 2018 (RealtyPlanet, 2021), are considered high-priced properties. Given that the largest number of households live in apartments with an area of 60–80 m^2 in Seoul (Seoul Information Communication Plaza, 2021), it can be seen that the households in this complex are relatively large; the area of apartments is 126 to 201 m^2. According to Park's (2000) research, convenience of transportation is the most preferred factor for selection of housing in South Korea. Next came landscape comfort, local development potential (investment value), surrounding amenities, school districts and housing prices. Raemian apartment complex is a residential area that meets all of these conditions, and although it is an expensive area, it is still a preferred one.

[6] The value calculated at a won-to-pound exchange rate of 1600.

Figure 3-4 Bird's-eye view of Bangbae Arthill
(Raemian construction, 2004)

The complex faces Umyeon mountain, with a wide road (called Nambusunhwan-Ro), and is slightly downhill from the mountain see Fig. 3-5). For this reason, the soil was swept down to it in the 2011 disaster event. Fences surround the complex except for the entrance and separate this complex from other places. Outsiders cannot enter any building without the permission of residents, and vehicles cannot enter the complex.

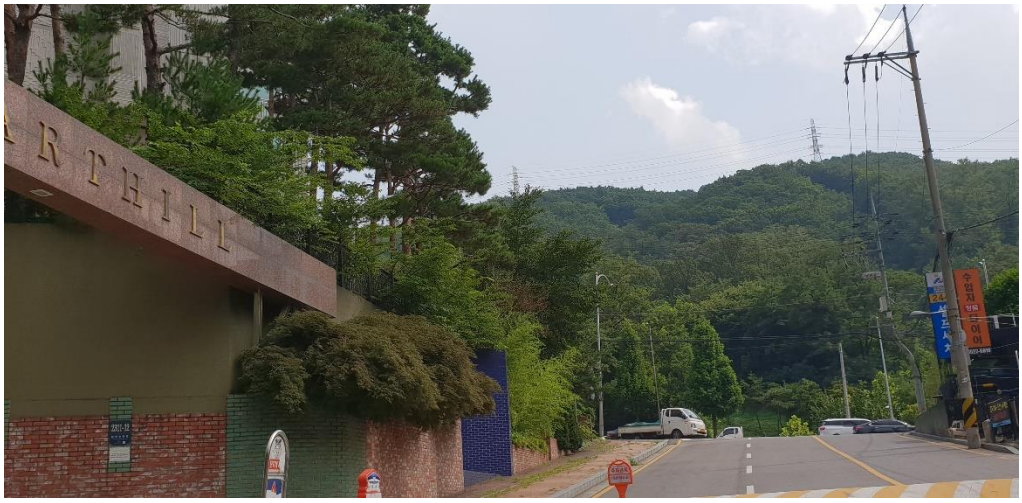

Figure 3-5 Umyeon mountain from Arthill entrance
(Source: author, 2018)

Like a normal apartment complex, this complex has some common facilities such as playgrounds and a library and a management office. Under the Apartment Housing Management Act, apartment complexes of a certain size or larger are required to have a self-governing management organisation; that is, a management office (Ministry of Government Legislation, 2021). The head of the management office is required to be elected by the occupants. In addition, since there are facilities such as lifts, it is stipulated to have professional managers.

It cannot be concluded that this complex is typical of other apartment complexes as a case study area. Large-scale disasters such as that which occurred here can hardly be found in other apartment complexes. Due to the nature of the flood disaster, no area can be classified as an exceptional area.

Jeonwon Maeul

The original name of this area is Namtaeryeong Jeonwon Maeul, which is simply called Jeonwon Maeul. The word *maeul* refers to a village in Korean. Since this area was created in the form of a zone (a complex), the word '*maeul* (village)' was given to the name of this development site. Jeonwon Maeul is in Bangbae 2-Dong, Seocho-Gu as an administrative district and is located in the southwest of Seoul and borders Geyonggi-Do. This village was created by a national development project. It was built in 1985 in compliance with the Suburban Community Renewal project as part of the national development plan. The Rural Housing Improvement Promotion Act is the basis for the project (National Archives of Korea, 2014). As this project was carried out by local governments to overhaul underdeveloped areas, we can guess how underdeveloped this place – which is now favoured by the wealthy – was at the time.

The village site is located at the bottom of the mountain where the military unit is located, so it had to be limited to a certain development area with a particular building height due to military protection zones and green belts. As a result, a low-rise small village with 202 households was formed. Unlike other detached housing districts in Seoul, the entire village is surrounded by mountains, so it does not feel like it is located in a dense city, which is one of the reasons why residents prefer it (Interviewee 19a). Houses in this village were generally traded at approximately £12,500 per 3.3m^2 as of 2018 (RealtyPlanet, 2021).[7]

The detached houses in this village have unique characteristics. Most of the buildings have a semi-basement and attic. The historical background of housing with this structure is that after the war in the 1950s, the building law as revised in 1970 stipulated that spaces for anti-communist and evacuation purposes (underground spaces) should be included in housing (Choi and Ku, 2020). At that time, the use of underground space was limited in residential areas, but the social problem of housing shortages caused underground space to be used as residential (Choi and Ku, 2020). Another feature concerns height regulation, since the height of the building is limited as it is in a restricted development zone, and it cannot be built with two or more floors. In addition, the Building Act, which was applied when this area was developed, had mandatory provisions for the installation of basement floors. For these reasons,

[7] The search condition was set for 2018 to enable comparison with the transaction price of Raemian apartments as presented on the previous page.

houses in this area have semi-basement-type basement layers that are not included in the number of floors. According to interviewees who are residents (Interviewees 19a, b), semi-basement spaces are usually occupied by tenants or used as warehouses. As shown in Fig. 3-8, detached houses are generally stretched on both sides between alleys, and individual buildings are surrounded by fences that are higher than people's height.

Since the Umyeon mountain dominates the village and the areas outside the village are restricted from development, the village space has not been able to expand since the village was established. There has been no significant change in the village for a while since it was created, but nearly 40 years later, some houses have been remodelled or rebuilt in the form of multi-family houses (Min, 2018).

Figure 3-6 Umyeon mountain from Arthill entrance
(Source: author, 2018)

Since Jeonwon village is surrounded by mountains, it is only possible to enter the village by car at the only village entrance. Local community facilities are mainly located around this entrance. There is a playground for children, a small park with benches and a town hall. It is said that the village hall plays the same role as a kind of senior citizen centre. When I visited, about 20 elderly residents were chatting here. It is said that this space is used most frequently for residents to walk about, and frequent contact between villagers may occur around this entrance (Interviewees 19a, b).

Figure 3-7 Village Hall located at the entrance to the village
(Source: author)

Currently, in Seoul, detached houses are rarely built and their number is decreasing every year (Korean Statistical Information Service, 2021). The area of districts made up of detached houses is also steadily decreasing. Even in these districts, many of the detached house buildings have been changed to multi-family houses, so there are more mixed areas of detached houses and multi-family houses than districts consisting of only single-family houses (Seong and Lee, 2016).

3.2.2 Interviews

One of the main methods for collecting data in this research was in-depth interviews. Interviewing people related to the community was intended to provide a deeper understanding of what the community's characteristics are. Interviews as a research methodology are a useful tool for collecting qualitative data. Eyles and Smith (1988) expressed such a method as 'a conversation with a purpose', which allows for discussion with people in unstructured or semi-structured ways. Through this, researchers can allow respondents to talk about their experiences and views in their own words (Valentine, 2005).

> *"… interviews are not neutral tools of data gathering but active interactions between two or more people leading to negotiated, contextually based results"* (Fontana and Frey, 2005, p. 646).

The interview method used in this study was slightly different depending on the interviewee. This is because the information I wanted to obtain was a little different depending on the interviewee. Respondents belonging to organisations such as experts, public officials, and staff in the volunteer centre were given semi-structured interviews, and I conducted unstructured interviews with residents. In semi-structured interviews, it is recommended that they lead to topics of various categories. I prepared shared questions across dissimilar categories of interviewees and some questionnaires expressed in keywords, but allowed respondents to talk about what they wanted. Respondents even told stories about others depending on their thoughts or opinions; this allows research data to be widely collected but is also necessary for investigators to maintain their objective status in interviews. Moreover, during a dialogue, the interviewer sometimes gains hints regarding other issues from interviewees that they may not have expected (Silverman, 2000). In the case of unstructured interviews, interview prompts in several keywords have been prepared to ensure that the interview does not deviate from the purpose of the study because it is feared that it might flow in a very different direction from the subject. During the interview, rather than asking questions without omitting all the contents of the prompt, a richer statement was made possible without cutting off the flow of the respondent's conversation as much as possible.

Different categories of interviewees

Determining the range of sample populations is also intricately linked to the questions in the study. As mentioned earlier, this study is conducted as a qualitative study, and the sample is also extracted following the study's purpose, not using a probability-based sample (Ritchie et al., 2003). In addition, the sample should have some similarities depending on the research question (McCracken, 1988). In this regard, several stakeholders in the area where the 2011 Umyeon mountain flood disaster occurred were the sample. Members of the community and

people related to the community were targeted. More specifically, the former refers to people living in each community, and the latter refers to people working for the community, such as village activists, public officials and volunteers. While designing a study based on interviews, I tried to interview subjects in as many social categories as possible. The main reason for choosing an interview sample in various categories was to compare the differences in perception and understanding of the same question. Questions such as expectations for future disaster risks, views on local communities and understanding of resilience were asked of the subjects equally. From their answers, differences in people's opinions in each category and differences in knowledge at diverse levels could be compared. In addition, various problems caused by disasters could be identified from their various answers. The subjects whom I met in the field research were experts, public officials, volunteer centre staff and ordinary citizens, including local residents. More detailed information on them is presented in the Appendix. When designing the interview study, I planned to meet many workers and experts from more diverse institutions related to disaster management. However, these interviews were not conducted due to various practical restrictions such as time constraints and refusal of interviews.

Table 3-2 Interview methods and interview purposes by respondents

Interview method	**Respondent classification**	**Number of respondents**	**Purpose of interview**
In-depth / Semi-structured	Expert	3	Thoughts/opinions on two concepts Major issues on disaster Governance
Semi-structured	Public official	6	Role Thoughts/opinions on two concepts Major issues on disaster Governance status
Semi-structured	Volunteer centre manager	2	Roles / difficulty Relationships with other organisations (government) Governance
Semi-structured	Residents in case study area	5	Experiences on disaster Thoughts on community / relationship with neighbours Thoughts on disaster issues
Unstructured	Non-residents	9	To obtain basic information about the area Thoughts on disaster issues
Common questions for all			Do you know about the resilience concept? What do you think about local community? What is the trend of flood disaster in the future? Whose role do you think is most important in solving the disaster problem?

The process of finding a gatekeeper

Since the case area of this study is Seoul, the researcher had to visit Korea for the field investigation (journeying from the UK to South Korea). Moreover, since the interview survey had to be conducted within a limited time, it was important to secure some of the organisations and interviewees to visit for interview before leaving the country. However, the interview request method was inevitably too limited. Therefore, it was imperative to find a gatekeeper to

enable the interview. The Seoul Metropolitan Government was obligated to establish disaster-related plans every four years. I found out that the researcher that authored the report was employed by an institution (Seoul Research Institute) under the Seoul Metropolitan Government. I expected the researcher to act as a gatekeeper and relate stories concerning this research topic. However, the researcher was on sabbatical, and was absent during my visit schedule. Alternatively, I asked another researcher for an interview and received prior approval. I met the researcher twice, and not only could I gain a lot of in-depth information from him, but he played a significant role as a gatekeeper. He introduced me to two other experts.

In order to find other interview respondents, I investigated various organisations related to the disaster and asked for interviews through an official contact (email address). The email included the purpose of this study, a rough description of the interview, and the expected visit schedule. Since the agency's website provided information on its departments and employees within the department, it was possible to obtain some extra information on the departments and employees related to this study. In this way, I received approval for interview requests from government agencies (Seoul, Seocho-Gu) and Seoul Volunteer Centre before leaving.

Interviews with residents were difficult to plan in advance. First of all, when I collected the information released in the UK before I left for Korea, I could not find any information about the committees or communities that might exist in both villages. Therefore, interviews with residents in the case study areas should have been conducted by direct visits. Since it was difficult to make an appointment in advance, I planned to visit the town hall or community facilities.

As the interviews were about individuals' experience, consent to the interview and use of data was essential. I had to fully explain the purpose of this study and the utilisation of the information collected to those from whom I would request interviews, and prepared research explanatory materials to help their understanding and an interview consent form.

There is a village hall at the entrance to Jeonwon Maeul. This is a space where residents can freely gather to promote friendship and various activities. There were about 20 residents there, and I explained the interview to them and made requests to the residents there. Four of them had lived there for more than ten years, and they were well aware of the events of 2011. On the other hand, Raemian apartment complex had the same facilities as the village hall, but there was no one using them, so I could not get a chance to meet the residents. As an alternative method, I wanted to use my personal connections for convenience and was able to be introduced to an old resident who lived there through an acquaintance. I expected to use snowballing methods to meet other residents through this resident, but she could not introduce me because she was not acquainted with her neighbours. Later, according to the head of the apartment management office, I found that most of the residents had not lived there for long,

and there were not many exchanges between residents. I could not obtain enough information because there was no way to create opportunities for other residents to meet. Therefore, it was necessary to find another way to obtain the information necessary for this study. The information I wanted to acquire from the residents was about personal disaster experiences and community activities in residential areas. Other alternative respondents who could provide this information were the head of the apartment management office and people in shopping malls, churches and offices near the apartment complex. The head of the management office provided information on the personal details of residents living in the apartment complex: the approximate ratio of property owners and tenants, and the main age group of residents. Information on changes in community activities and the use of community facilities in apartment complexes was also provided. The people in nearby offices were those who continued to work there during the 2011 disaster, and they also talked about the situation at the time, the damage their property sustained, the renovation process in the area, and what happened in the apartment complex that they saw and heard.

Field study and interview process

The researcher visited Korea in the summer of 2019 and conducted an on-site survey, including an interview survey, for about two months (July and August). Since this survey period is relatively short, a strategy was needed to collect the necessary data within the time limit. Regarding the 2011 disaster, it was necessary to review the secondary data and identify the parts requiring supplementary data in advance. In addition, as described above, one method was to secure interviews before departure.

In situations where interviews were promised in advance, they were conducted in the office or conference room provided by each institution to do so. In the case of interviews with residents, the place where we met became the interview location. In order for respondents to feel comfortable during the interview, it was usually conducted at a place they were familiar with, such as a park bench or a town hall. The interviews lasted between 30 minutes and two hours.

The main target sites of this study are two: Banpo Raemian Arthill apartment complex and Jeonwon village. I visited the target area more than twice. In the first survey, the places to be visited to plan the field study were identified so that efficient movement or time planning could be made. All the areas I had to visit were in Seocho-Gu, but the areas were quite far from each other, I had to save time, so my main means of transportation became a taxi. Taxi drivers unexpectedly became vital interviewees. They often had indirect experiences about the flooding of Umyeon mountain as people who travelled all over Seoul and provided quite a lot of information to me about the flood-prone areas and changes in Seoul. From the second visit, I focused more on finding interviewees. In many cases, people refused interview requests,

requiring other flexible strategies to establish a successful relationship with the interviewee. As a result of trying several methods, I found it more effective to introduce myself as a researcher studying abroad while requesting an interview. It seemed to give people a certain degree of trust. In addition, revealing that the interview contents are used only for research purposes seemed to act as a factor that relieves the burden on interviewees. After accepting the interview, they tried to tell as many stories as possible, and some villagers mobilised acquaintances around them to add stories about memories they could not provide themselves.

For this study it was necessary to interview residents who had suffered the disaster in 2011, but many people could not be met due to unexpected circumstances. For example, there are two main exits in the apartment complex, underground parking lots and front gates. However, both were restricted for outsiders, making the building completely inaccessible, so I hardly met residents. Some residents who I encountered on the street in the apartment complex refused to give interviews. This meant that another sampling strategy was needed. Additional samples may be required in the sampling process due to the immediate situation (Ritchie et al., 2003). As I looked for people who suffered in the disaster, I realised that the target was limited to residents. It was judged that it would be better to expand the target more because people based in the region would have been greatly affected by the disaster at the time. This study also required general information on disaster experience; specifically, what occurred during a disaster. Even if the respondents were not residents of the apartment complex, those who experienced a disaster in 2011 would be able to tell the story of how they felt and the situation at the time. For example, some suitable interviewees would be people with workplaces in the area or those who did business there and suffered in the disaster at the time.

Another example of using an alternative method in the sampling process was a telephone interview. I asked government officials for interviews several times, but they refused, saying it was difficult to be available for that. So, I suggested having a brief interview over the phone, and they allowed me to ask very few questions. Because I could only ask a few questions in a notably short period of time, I could not get enough answers from the phone interview. However, since it was allowed to make several calls, it was more beneficial to obtain information by checking the facts about the previously obtained information or asking questions about additional information rather than asking for their opinions.

During the investigation process, research hints were also obtained. Collecting field-friendly data obtained by researchers through face-to-face interaction in the same situation is also one of the characteristics of qualitative research (Creswell, 2003). Since the interviewees were residents in this study, several residents had to be asked to be interviewed at the site. I obtained several hints related to the study from the reactions and reasons of those who refused to be interviewed. When I asked people for interviews, I had to lower their suspicion against

myself as a stranger. So, I tried to approach them with as much small talk as possible. One of those light questions was, ‘Is this the place where the Umyeon mountain landslide occurred in 2011?’, and a few people responded, ‘This place has nothing to do with the incident anymore’ or ‘This area is not that area’. One of the people who answered in this way was a real estate agent. Interestingly, a person who knew the area very well provided incorrect information. It can be hypothesised that many people believe that information on risks may affect the value of real estate in the area.

Some common questions were asked of respondents: 1) whether they knew about disaster resilience; 2) what the local community was; 3) how they expected future disaster patterns to change. The respondents were people from various backgrounds and one can compare how these three questions are perceived differently or similarly.

The limitations relate to the restrictive investigation process. It has been a long time since the disaster, and it was difficult to meet people who remembered the situation in detail. Although the people remembered the general period, it is also possible that their memories have been distorted as time passed. Important memories may have disappeared, and it may be difficult to ensure that memories are accurate. For example, tenants in Jeonwon Maeul were direct victims of the flood at the time, and they might be very important subjects to be addressed, but no one remained in the village. Most of the people who were asked for an interview in the Raemian apartments were not living there at the time, so there were very few opportunities to hear the story directly. Much document material have been used to supplement the gaps caused by time, but there is a limit to filling all the gaps.

Data record

As long as the interviewees agreed, the interviews were recorded. Interviewees were provided with a document briefly explaining the purpose of the study and it was explained that the interview could be used for research purposes. Basic personal information such as name (anonymisation), area of residence, age group, and occupation was collected from the respondents, and some participants agreed to the interview but did not provide all personal information. In that case, only gender, place of residence and age group were asked.

If the interviewee was reluctant to be recorded, I took notes in my notebook. The act of taking notes may interfere with the interview, because if someone thinks that an interlocutor is writing down what he or she has said, the speaker may feel a psychological burden while talking. Therefore, I wrote down only a few keywords to remind me of what the interviewee said during the interview. After the interview, I left the place where I was with the interviewees, and I added more detailed information to the keywords in my notes.

In the case of public officials who agreed to face-to-face interviews, talks continued in a more natural atmosphere after stopping recording. The conversation without recording took about 30 minutes, and there were meaningful contents in the conversation, which I noted down after moving to another place after the interview.

3.2.3 Secondary data

Secondary data refers to existing information that someone has already collected, as opposed to primary data (Clark, 2004). There are pros and cons that one should be mindful of when using secondary data. Although there is a wide range of secondary data available that is relatively easy to acquire, in some cases, it may be difficult to customise the data, and the accuracy of the data may not be verified. Since the secondary data was originally collected for a different purpose from that of this research (Creswell et al., 2007), it was necessary to be careful in finding and selecting data suitable for the purpose of this study. Therefore, I intended to use data with transparent sources, and when cross-validation was possible, higher reliability could be secured for data used through a process of comparing and checking.

The secondary data used in this study are media press releases such as articles and news, statistical data, government documents and research reports.

The official documents published by the government are extremely informative in terms of giving information on the administrative district to which the case study areas belong. Various statistical data collected by the government was also used throughout this study, and the data helped to grasp basic demographic and social information about the case study areas. In addition, weather information was collected, and the annual disaster yearbook published by the Meteorological Administration were useful in identifying disaster trends in Seoul. Various data collected by government organisations may provide information about the background or context of community formation and the diverse resources that a community can utilise. The case study areas (which might be local communities) I chose were developed as residential districts by urban development plans.

Since the event selected by this study was a disaster that occurred a long time ago, a multilateral explanation of the event organised with secondary data helped structure and understand the event. This disaster caused much damage and highlighted various problems that could have been socially controversial and have been dealt with in various press releases for quite a while since the disaster. Therefore, a lot of secondary data could be collected by the media dealing with this disaster.

In this study, apart from the direct damage of flooding caused by the disaster, there were various problems that victims could face. In other words, it was expected that through studying the problems I would be able to derive factors that may affect disaster resilience by identifying the path through which they can intensify and what other external influencing factors may exist. The process of listening to stories about the experiences of the victims at the time is important, but there was a problem, in that I could not meet the victims in person as too much time had passed since the incident had occurred. Even if I found people who remembered the event at

that time, there would be a possibility that the memories of the victims were inaccurate or distorted. In this respect, articles and news items that reported interviews with residents during the disaster allowed me to fill the information gap about people's disaster experiences.

Two official investigations into this disaster were conducted by investigative research services to analyse its cause. Various different types of experts investigated the cause of the disaster from various angles. The first results were announced two months after the disaster occurred (in September). However, the government and the victims disagreed on the investigation results, so the victims requested reinvestigation. The second set of results were released in November (Korean Geotechnical Society, 2011), and these were slightly different. In the process of these two investigations, various social conflicts and problems related to this accident could be identified.

Most of the secondary materials could be read and downloaded from the website of each institution. However, several government-published reports had restricted public access. Reports published by the government have disclosed the title and the report's purpose, so the lists of documents were identifiable. Therefore, I was able to check what materials I needed even though I could not get them directly through the download. I received the original data using the formal procedure for doing so: the 'Information Disclosure System'. This procedure is a system that requires public institutions to provide information to citizens who have the right to know (Ministry of the Interior and Safety, 2021). All data was obtained through this procedure, except for one request for data that was rejected because it contained personal information.

In addition, there were cases where information was obtained from the interviewees. They provided the researcher with internal data mentioned in the interview. Although such data collected was not used directly in the study, it helped build relevant background knowledge.

3.2.4 Managing data and analysing

Researchers should 'interpret' the vast amount of data collected and draw out meaningful topics. Since there are many areas in which researchers intervene in qualitative research, concerns are raised that the analysis is subjective. However, qualitative methods of interpreting based on abundant non-numerical data such as interviews, literature materials and observations may make the research subject more contextual and allow the researcher to develop a deeper understanding. In this respect, it is becoming clear that qualitative research is a valuable tool for understanding the social world and is logical (Flyvbjerg, 2006). A systematic process is needed in the analysis process to make this clearer.

In order to analyse, systematic classification of the collected data is necessary. The primary process of processing data to understand what data means is coding, classification and subject assignment (Lichtman, 2014). Data obtained from qualitative studies are often in the form of words (speech or text). In order to find meaning from vast amounts of data, a kind of data manipulation process is needed to screen unnecessary data. At this time, the main method is to code (Lichtman, 2014). This study used NVivo software to code interview contents. NVivo is not a program that directly performs analysis like statistical programs used in quantitative studies. It is a program that supports the coding process, in which a user may assign a node and a code system to the data. Nodes are positioned to reference the text, which can be hierarchised and represented in tree form (Hilal and Alabri, 2013). Hierarchising interview materials with nodes and sub-nodes has the advantage that the researcher is then able to organise ideas systematically. Through this process, ideas can be managed in a single code system encompassing nodes and sub-nodes.

Interview materials require a transcription process, and the interviews in this study are in Korean, so it was necessary to consider whether Korean should be translated into English. However, since I am not a professional translator, it was impossible to translate all interviews into English completely. In addition to its literal meaning, the language used in the conversations has a subtle nuance. Understanding this nuance is also crucial to understand the content of the conversation. I could have asked a professional translator to translate, but this was not judged to be very effective compared with the time and cost that would need to be spent. Because the interview was not filmed, I thought that even an expert who did not know the context of the conversation could not fully understand the whole story. Errors that may occur in the translation process can also reduce the reliability of research.

For these reasons, all the contents of the interviews were analysed in Korean, except when citing some interviews, in which case I chose to record them in English in the coding process. As far as possible, I wrote down all the conversations as they were and checked more than once whether the contents recorded were correct.

Chapter 4. Resilience to what?

4.1 Introduction

The flood disasters covered in this study are external risks in terms of disaster resilience. In resilience theory, external influencing factors can cause confusion and disruption to the affected target system. This can be a problem when the magnitude of these external stimuli is large enough to cause changes in the system, so it is important to deal with what the external influencing factors are. Many experts are interested in the 'thresholds' at which external factors causes system change (Gunderson and Holling, 2002; Gallopín, 2006; Folke et al., 2010). In this respect, disaster management may be about how the human system manages external disturbances within its critical thresholds (Davoudi, 2012).

This chapter examines the nature of flood disasters as a risk factor in Seoul before discussing what is important for Seoul to be resilient to flood disasters. Flood damage continues to occur in Seoul every year, though there may be slight differences between areas. Seoul is a megacity with a population of around ten million, and the risk factors of a large city are completely different from those of non-urbanised areas. Cities, by themselves, have some factors that can increase flood risk. Urban areas covered with various buildings and roads must be constructed with an artificial water drainage control system because water cannot be absorbed into the ground. However, the system that the city has is experiencing many events exceeding its limits. In addition, altering the capacity range of the city again becomes a challenging problem. Also, the various elements of the urban system are dynamically linked to each other and make it difficult to determine how the risks will affect each other.

The goal in the area of disaster management is to minimise the impact of disasters (Paton and Johnston, 2001; Bruneau et al., 2003). However, the risks of natural disasters cannot be fully predicted and prepared in advance; nor is it possible for the system to absorb all of the possible effects of the disaster. An urban system affected by a disaster, no matter how completely restored, cannot be the same as it was before the disaster occurred. The problem is that the patterns of disasters are changing and are more difficult to predict. As climate change progresses, abnormal climate events have increased worldwide. Many experts, including UNDRR, predict that there will be a sudden and severe natural disaster that will arise in the future, given the pattern that has continued from the past (Korea Meteorological Administration, 2011a). In Korea, such an abnormal climate trend is continuing, so it is necessary to deal with flood disasters from a slightly different perspective than the current disaster response method. Natural disasters in Korea account for more than 90% of disasters caused by water, such as droughts and flooding. Typhoons and rainy seasons are

concentrated in the summer, and extreme weather events have now been added to make the flood disasters in summer more serious.

In this chapter, various statistical data are used to find out how serious the flood disasters have been in Seoul, the study site (section 4.2). Also, in order to deal more with the effects of the flood, the case study areas are outlined in terms of how severe the heavy rains in the summer of 2011 were and how the recovery process proceeded (section 4.3). In order to explain why flood disasters need to be faced with resilience, the nature of the flood disaster and the problems caused by it are described in three aspects (section 4.4).

4.2 Recent flood patterns in Seoul

In this section, recent flood patterns will be explained, focusing on Seoul, which is the research subject area. Floods cause the most damage to human systems in Korea of any natural disaster. They have left thousands of people homeless, have killed many people and cause massive property and public infrastructure damage every year. Even highly concentrated urban areas are no exception. In Seoul, risk and damage from floods are likely to be further increased with such concentration. The city has suffered flood damage of varying severity every year.

Mandych (2009) defines flooding as follows:

> *"Flood is determined as a general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal waters, or from the unusual and rapid accumulation or runoff of surface water from any source"* (Mandych 2009, p. 219).

There are two causes of rapid accumulation of water in Seoul. The constant experience of flood disasters in Seoul comes from the meteorological characteristics of increased rainfall and the limitations of the city's drainage system that cannot adequately hold within the city, or convey out of the city, these vast amounts of water. A great amount of rain concentrated in a very short time would be one cause. The most damaging heavy rain in the last decade occurred in July 2011, with cumulative precipitation of 595 mm over three days (Shin et al., 2011). Looking at the change in the ten-year average value indicated by the black dotted line in the graph below (Fig. 4-1), it can be seen that the annual precipitation in Seoul has been gradually growing. Compared with the past, the total amount of rainfall has increased, as has the number of heavy rain events. It is clear from Table 4-1 that the heavy rains have become more frequent; the days of rain more than 30 mm per hour have increased compared with the 1970s (1972-1981). Rain falling at more than 30 mm per hour is considered to be heavy rain, and that amount of rain is likely to lead to a disaster. Moreover, the average number of days with more than 50 mm of rain per day was 5.3 from 1972 to 1981 but it rose to 7.8 from 2002 to 2011, and the number of days with over 80 mm of rainfall more than doubled from 1.9 days to 3.9 days during the same period.

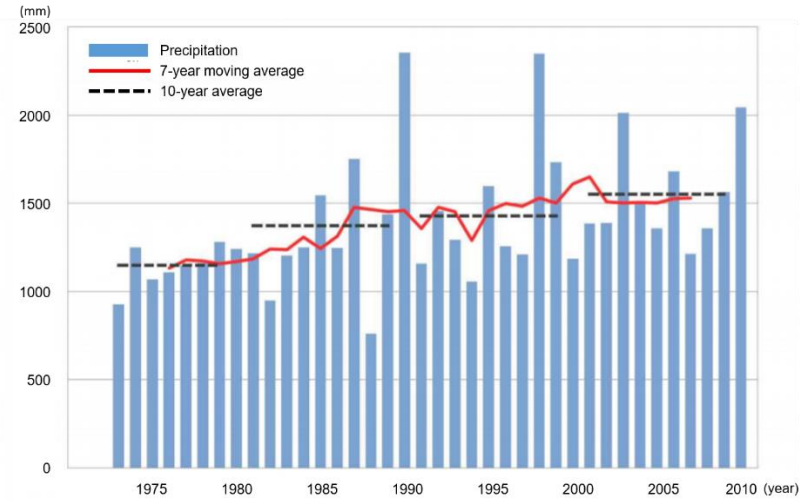

Figure 0-1 Change in annual precipitation in Seoul between 1970 and 2010
(Source: Korea Meteorological Administration, 2011b)

Table 0-1 Change in frequency of heavy rains over 40 years (1972-2011) in Seoul

		1972–1981	1982–1991	1992–2001	2002–2011
Number of days of rain	≥ 30mm / hr	11	27	41	41
Average days	≥ 50mm	5.3	6.7	7.5	7.8
	≥ 80mm	1.9	2.6	3.5	3.9

(Source: Kim, 2016)

In Korea rainfall is concentrated in the summer season compared with other seasons due to the influence of high pressure in the North Pacific Ocean and typhoons. However, in recent summers, rainfall has been more intense. According to Seoul's seasonal precipitation statistics, the rainfall in the summers in the 1970s increased from 720.0 mm to 1,038.8 mm in the 2010s, while the rainfall in the winter decreased from 74.8 mm to 62.1 mm (Kim, 2016).

The second main cause is related to physical infrastructure capacity. The reason for such overflowing is that the amount of precipitation is more than the existing capacity to contain such rainfall. Seoul's capacity for rainwater storage is insufficient in three perspectives. The capacity of the existing storm system is sometimes unable to handle the heavy rainfall. Furthermore, the area of permeability that allows the amount of runoff to be reduced by containing rainwater has decreased across Seoul. The total land area of Seoul is 605.2 km². The impervious area was only 7.8% in 1962 but has steadily increased since then to 65.3% (18.6% in 1970, 37.2% in 1982). When one considers the forest area surrounding Seoul, the majority of the area that is covered with an impervious surface. As the permeable area was reduced, the drainage treatment facility was overloaded, and the outflow of rainwater increased. Comparing 1962 and 2011, the amount of rainwater penetrating the ground decreased by half, while the outflow surged from 11% to 49% (Kim, 2016).

In Seoul, the topographical characteristics have a significant influence on the distribution of precipitation. As can be seen from the Seoul topography below (Fig. 4-2), Seoul City is surrounded by tall mountains in the form of an amphitheatre. In addition, the Han river, located in the centre of Seoul, is about 1 km wide and flows from east to west. Several tributaries across Seoul gather together to form this large waterway. Due to these topographical characteristics, water in the Seoul area runs into the river and flows toward the western sea along with the river's flow. Therefore, the flow control of this river becomes an important strategy in flood management. Since the 1960s, the Seoul Metropolitan Government has increased its dimensional capacity by conducting large-scale development projects twice. These projects have widened the river and created underwater streams, allowing the quantity to be adjusted to a certain level (Yoon and Park, 2008). The coefficient of the river regime[8] of the Han river is 390, which means that the river has a significant fluctuation in precipitation throughout the year, but at the same time, it also can control quite a lot of flow rates. These river management projects have reduced floods caused by the direct inundation of rivers, but floods occurring in lowlands or underground spaces continue (Shin et al., 2011).

Figure 0-2 Seoul's topography
(Source: Korea Meteorological Administration, 2011a)

The severity of flood disasters varies from area to area each year. Fig. 4-3 gives information about the number of flood events in 24 *gus* in Seoul from 2008 to 2017. The figures below (4-3, 4-4 and 4-5) are reconstructed by the author based on Seoul's statistics of natural disasters (Open Government Data, 2019). All areas suffered from flooding more than once over ten years, but some experienced floods more often. The average number of events undergone by these *gus* was approximately 7.2 over the ten years (2008–2017), and the frequency of floods

[8] This is an indicator of the deviation of the river flow rate and is the ratio between the lowest and largest flow rates throughout the year. Comparing the indicator of major rivers by country, the Seine river (France) is 34, the Yangtze river (China) is 22, the Rhine river (Germany) is 18, and the Thames river (UK) is 8 (Ministry of Construction and Transportation, 2007).

exceeded this figure in nine districts. Figs. 4-4 and 4-5 illustrate the extent of flood damage in more detail in these nine *gus* over the ten-year period.

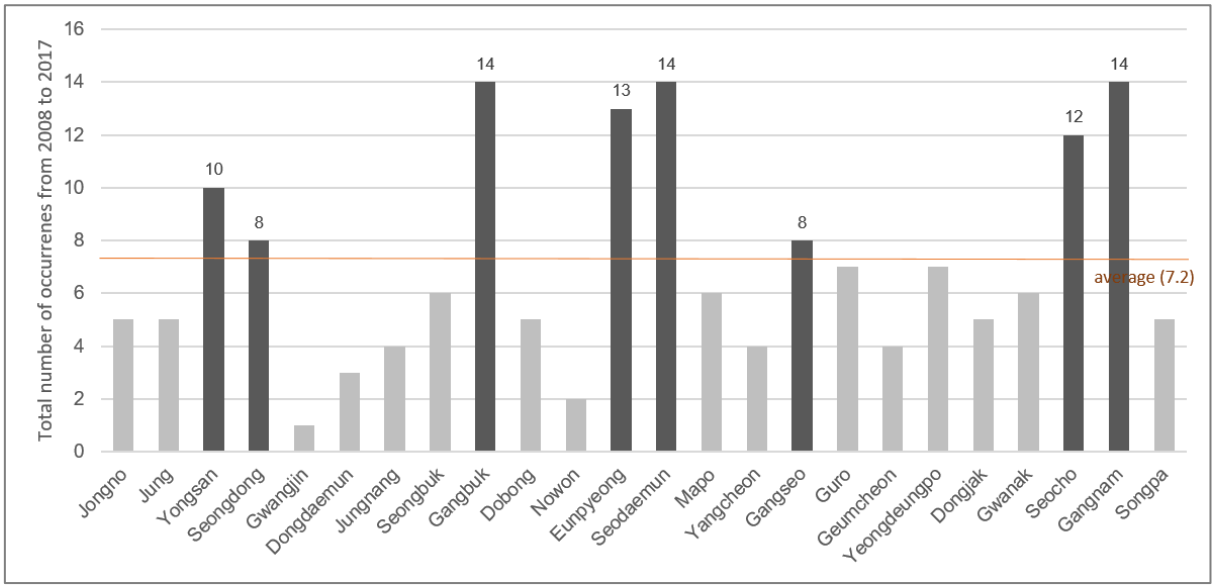

Figure 0-3 Total frequency of flood events by *gu* over 10 years (2008–2017)

The graphs below show the cumulative amount of flood damage for about ten years, Fig. 4-4 shows the damage converted into an amount, and 4-5 shows the number of flooded households and victims. The map of Seoul next to the graph shows the degree of damage by the district. The colour contrast indicates the degree of damage, which means that the deeper the red colour, the greater the damage. It can be seen that flood damage is more significant to the south of the Han River. Seocho-Gu, the target site of this study, is one of the areas with severe flood damage. For ten years, the cumulative damage in Seocho-Gu has been the greatest amongst the districts, about 2,121,641,000 won or about £1,326,025. In addition, there are 9,263 cumulative victims in 3,100 households.

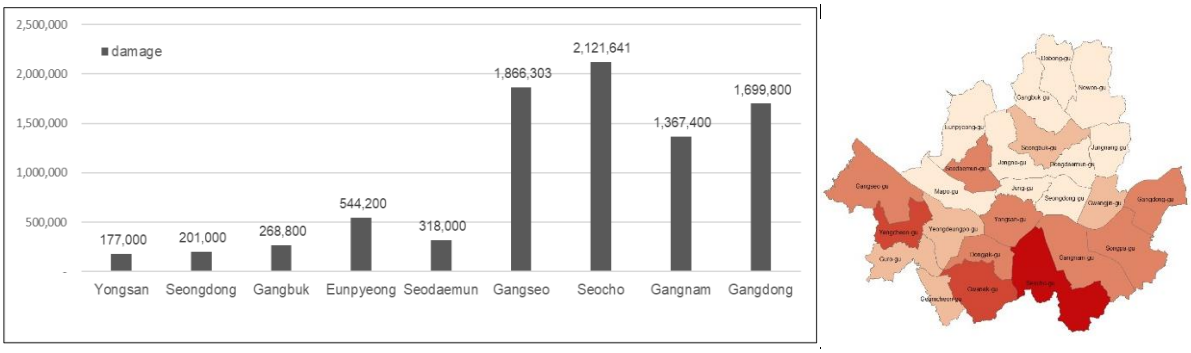

Figure 0-4 Cumulative damage cost (unit: 1,000won ≒ £ 0.62)

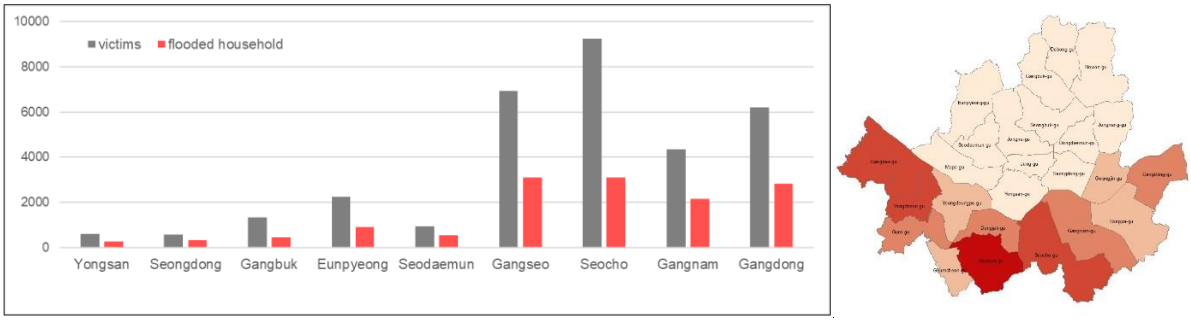

Figure 0-5 Cumulative flooded households and victims

The Seoul Metropolitan Government believes that the low capacity of physical systems such as sewage pipes and rainwater pump stations is the cause of floods and has been making continuous efforts to improve these problems.

4.3 The 2011 flood and landslide

study focuses on the disaster that occurred in 2011 and intends to address the issues related to disasters in more detail. The disaster, which occurred abruptly in the early hours of the morning, caused damage to Umyeon mountain and many areas around it.

4.3.1 Affected areas

The extreme torrential rain triggered flood and landslides in some parts of Seocho-Gu on 27th July 2011. Heavy rain and the associated incidents happened suddenly early in the morning between 07:40 am and 08:40 am when people were going to work or school. Most of the damage occurred mainly around the *Umeyon* mountain. Sand, rocks, and wood debris poured into the residential area over the main access road with a considerable amount of rain. According to the announcement by the National Emergency Management Agency (2011), there were 16 fatalities and 2,272 flooded households due to the catastrophic disaster.

Prior to giving a detailed description of the event, it is necessary to mention where the mountain is located and what is built around it, because the location can provide a complementary explanation of the many situations that may weight damage. Umyeon mountain is in the Seocho-Gu administrative district, which is one of the densely developed areas in Seoul. The mountain, which has an altitude of 293 metres, is relatively low in height compared to other mountains in Seoul. As can be seen from Figure 4-7 below, some types of dwellings are developed in and around the foothills. There are a small number of villages with low-rise detached houses, and several high-rise apartment complexes surrounding the mountain. There is an Air Force base near the top of the hill. A roadway runs from the bottom of the mountain to this air base. Despite the fact that there is a public path and some hiking trails, public access is restricted near the military area. Around this mountain, there are major roads that lead to other cities. Amongst them is a two-way, eight-lanes road called Nambusunhwan-Ro, which is a crucial trunk road and provides access to the western end of Seoul. Also, some public facilities such as Seoul Arts Centre, Seoul Human Resource Development Center and the Korea Educational Broadcasting System (EBS) are situated at the foot of the mountain.

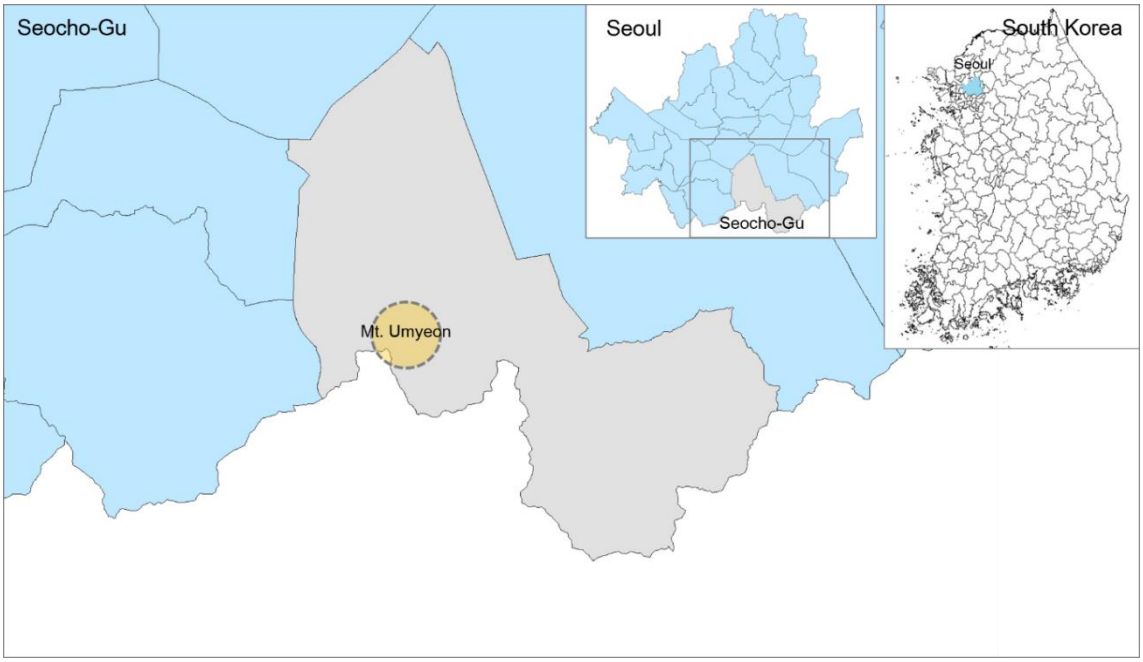

Figure 0-6 Location of Umyeon mountain

Figure 0-7 Residential areas and major facilities around Umyeon mountain (by author)

4.3.2 The extent of the damage

The flood of 2011 inflicted enormous damage. The wide road called Nambusunhwan-Ro that passes by the mountain was covered with water and soil. In addition, a large mound of sand, rocks and tree debris poured into wide residential areas beyond the road. As stated by the official number, a total of 67 casualties were confirmed (16 dead, 51 injured) (Korean Geotechnical Society, 2011). Of these, casualties occurred in the case study areas; three people died in Raemian Arthill apartment complex and six people in Jeonwon Maeul. The physical damage was severe as well: 11 homes were destroyed or partially destroyed, 76 vehicles were damaged, and 2,103 houses were inundated (Open Government Data, 2019).

Figure 0-8 *Nambusunhwan-Ro* covered with soil
(Source: *Kim*, 2011)

It is clear that the amount of rain that fell on that day was enormous. However, Kwon (2011) pointed out that the degree of loss was too large compared to the amount of rain that fell. The quantity of rain for one day was 301.5 mm across Seoul, and this figure is similar to one-quarter of the average precipitation (Korea Meteorological Administration, 2011a). Some scholars insisted that the city needed to be able to cope with that quantity (Park, 2011; Cho, 2011). There was controversy between people affected directly and the Seocho-Gu local government over why the harm was more substantial than expected. Since then, the Seoul Metropolitan Government organised a research group to find out the exact causes for the magnitude of damage, and two investigations (in November 2011 and March 2014) examined these. As stated by the final report (2014), the primary and immediate cause was certainly torrential rainfall, but many complex events aggravated the damage.

> *"It rained a lot, but … It is not a huge amount … It rained more than other times. However, there is a military unit at the top of the mountain. The* gu *had dug up the ground there for*

construction. To make matters worse … there was a reservoir that looked like a pond around there, and it burst when water was collected there" (Interviewee 10).

"The trees populating the mountain were piled up and washed away because it rained a lot. They interfered a lot with the water escaping. Wooden waste blocked the sewer that had to drain all the water, but now it overflowed because it could not escape" (Interviewee 19).

Residents of the affected area and various media reports raised several possible causes of the disaster: torrential rain, drainage, the impact of artificial facilities at the top of the mountain (Jung, 2012), insufficient restoration of previous typhoon (*Kompasu*) damage (Lee, 2011; Interviewees 11, 19), the inappropriate response of administrative agencies (Kim, 2012), artificial facilities, repeated blasting at Seocho tunnel near the mountain (Jung, 2012), the influence of artificial facilities on hiking trails (Jung, 2012) and the indiscriminate creation of ecological parks on the mountain (Park, 2011; Lee, 2011). They argued that this disaster was 'weighted' by something else.

According to data officially released by the Seoul Metropolitan Government (2011) as a result of the first investigation, the cause of the disaster was heavy rain. Despite the formal investigation into the cause of the disaster, conflicts between the victims and the government were not resolved as to whether the disaster was man-made or natural. Instead, the first investigation results resulted in an 'amplifier' of conflict (Kim and Yoon, 2013).

The results received much attention from various subjects because the wavelength effect that this result would have been substantial. Identifying whether this disaster was human-induced, which became more significant because people have not been able to cope properly (Kim and Yoon, 2013), was no different from determining whether the government was at fault. The probable causes of the disaster raised by victims were due to what the government did or had to do. According to Article 2 of the State Compensation Act, if the state's obvious fault is recognised, it may be liable for damages (Choi, 2018). The investigation results were related to 'who' would take on the consequences of the damage, the government, who may be held accountable, or the individual, who may have to bear the consequences of the damage. For some victims who filed lawsuits against the state, the lawsuit's outcome could have been determined by the results of the investigation.

Eventually, the first survey results led to a backlash from residents and environmental groups, and further investigations were conducted at their request. The causes of the disaster were investigated by the government twice. It was fairly unusual for the government to conduct an investigation. Although the government had done so in this case, it is not easy to regard their actions as voluntary. Several circumstantial conditions that meant that the government had no choice but to investigate were met. The first condition was that the disaster caused so

much damage that it could not help but receive so much attention. This is also called the 'crisis effect' by an environmental psychologist (Stefanovic, 2003), which refers to the peak of disaster awareness in the event of a disaster. The greater the effect of a disaster, the higher the peak. The question of what made it so was not only asked by the victims but also by the whole country. The second condition is that the disaster issue was used as a political tool. Politicians often use disasters as an opportunity to gain public recognition (Ewart et al., 2016). About a month after the first investigation's results were announced, a new mayor was elected in Seoul. The newly elected mayor used another examination as a means to present something different from the previous mayor. After being elected, the mayor, who met the victims, promised further investigation on the spot. An issue that had already become a social issue at its peak may have been a highly effective means to a political opportunity.

As a result of the second investigation, the cause of the damage was slightly different from the previous one. According to supplementary investigation findings (Korea Civil Engineering Association, 2011), the frequency of rainfall that caused disasters was adjusted slightly lower. However, the leading cause of intensive rainfall and lack of preparation led to increased damage. The result was somewhat different from the victims' expectations, so they expressed opposition for various reasons. In particular, the one-off public hearing held before the announcement of the results was criticised for being the only process to collect opinions from citizens.

The prevailing opinion was that insufficient preparation was the biggest cause of the severe damage. This had led some victims to hold state agencies accountable. There were nine legal disputes between the government and the residents, and the cases usually took four to five years to reach a conclusion; indeed, one lawsuit has not yet been finalised. The victim or the victim's family filed lawsuits against the Korea Forest Service, [9] Seoul Metropolitan Government and Seocho-Gu local government for damage compensation. According to the legal judgment, the central government and Seoul Metropolitan Government were not held liable, but Seocho-Gu was found to have some liability due to not taking appropriate warning measures ('Suit for damages', 2019). A ruling was not reached and, the court dispute has been sent back by the Supreme Court to retry the original judgment. However, even though the final ruling has not yet been made, the Seoul High Court cannot make a decision against the Supreme Court because it is an inferior court. Therefore, it can be seen that the decision by the Supreme Court that 'the causal relationship between Seocho-Gu officials' violation of duties and the death of the victim is recognised' is confirmed (Son, 2019).

[9] Korea Forest Service is a central administrative agency in charge of forestry affairs, such as multiplying forest resources, fostering forest protection, and developing and using forest products.

During the disaster recovery period, many very complex processes took place. The primary process was to recover from direct damage caused by the disaster. This means returning the place that was submerged in water or buried in the soil to its normal state and reconstructing places that had collapsed. The recovery work required considerable effort as the losses were severe. Early-stage restoration efforts focused on restoring the function of essential infrastructure, such as roads. The loss of functioning roads might increase response and recovery time by preventing many necessary pieces of equipment from reaching the right place on time. Army personnel in the units that were situated on the top of the mountain were drafted in to restore and clean up the mess. The Seocho-Gu local government made available a certain amount of money to households that had experienced damage,[10] but it was inadequate to recover their economic position (Interviewee 19). Only 11 households could receive compensation for damages according to the government's standards for damage assessment. Most of the recovery work was done by the victims themselves.

The public sector has financial resources for recovery, so costs and time can be clearly determined, but individuals had many difficulties in achieving physical recovery of their properties. It took three days for all the dirt on the Nambusunhwan-Ro to be removed and for it to function again. Two Umyeon's restoration projects cost 20 billion won (about £ 13 million) and 22 billion won (about £ 14.5 million) respectively, and it took a year to finish the construction. On the other hand, individuals demonstrated great differences in recovery ability due to their different situations and degrees of damage they suffered. In the Raemian Arthill complex, community facilities that were damaged by landslides and floods were able to collect money from the entire population and proceed with the construction (Interviewee 13). In addition, the Raemian apartment complex had comprehensive insurance, which included a special contract about storms and floods. The apartment complex paid insurance premiums as part of the apartment management cost. So, the insurance covered most of the damage (Kim, 2011). However, it is mandatory to get fire insurance for apartments above the 16th floor but people rarely buy insurance that offers a particular option like storm and flood insurance, as in the case of Raemian (Korea Apartment News, 2011). As of 2011, only 1.7% of all households had bought storm and flood insurance. However, even this figure is due mainly to policyholders from rural areas (Kim, 2011). On the other hand, in Jeonwon Maeul, which consists of detached houses, most of the damage was to tenants living spaces in the semi-basement. The tenants had to restore flood damage themselves, and some people had no

[10] Compensation for the loss: The government paid 2 million won (roughly £1,300) for flooded households, 4.5 million (£3,000) won for half-destroyed houses, and 9 million won (£6,000) for completely demolished homes, according to the criteria for estimating natural disaster recovery costs after the 2011 Umyeon disaster.

place to live during the recovery, so they lived together in a village hall for various periods between a few days and over a month.

The pictures below in Figure 4-9 show the restoration after the landslide. The valley where the soil and water were poured was restored by artificial structures. The photo on the right is a pole with a rather grotesque appearance. The electricity pole, which had been knocked down by water and soil, was recreated with a curved shape. This aims to reduce damage in case a similar accident happens again.

The shape of this restored pole posed the question of how far the disaster site should be restored. Other restoration measures were similar to those for the electricity pole. As shown in the left-hand picture in Figure 4-9, the place where the landslide occurred was reinforced with an artificial structure to prevent the landslide from occurring. The shape of this telephone pole will be able to prevent the damage that may be caused in the next case of a similar disaster. However, the question remains whether the restoration made after this disaster was a fundamental measure to prevent future disasters. From these recovery measures, it can be inferred that the government has adopted a narrow meaning of damage recovery.

Figure 0-9 (Left) the current restored state of the landscape where the landslide occurred; (Right) a newly installed curved electricity pole after the event

(Source: author, August 2019)

4.4 What we need to learn and what we learned from the 2011 flood disaster

The 2011 *Umyeon* mountain disaster was a huge disaster in a big city. A major disaster causes a great deal of interest in society as a whole. It is also a time when various perspectives on what problems have been overlooked are poured out. External shocks are often referred to as opportunities in the resilience discussion (Manyena et al., 2011). This is expressed as ‘learning’ or ‘adaptation’ in various pieces of the literature (Walker et al., 2009; Folke et al., 2010; Adger et al., 2011; Gao, 2018), and it is a process in which what is learned from experience leads to knowledge acquisition, which then leads to improved responsiveness or policy changes (Gao, 2018). Chapter 2 mentioned that learning is deeply related to adaptive capacity and plays a role in community resilience.

As this is such a recursive learning process, I would like to discuss what needs to be learned and what was learned in the 2011 major disaster. First of all, I look at several characteristics of flood disasters and deal with what need to be considered significant (section 4.4.1), and in the part that follows (section 4.4.2), I examine whether the recovery efforts observed in various situations after the flood disaster worked well as a recursive learning process for communities and local governments.

4.4.1 Flood disaster characteristics

Floods are a risk factor for humanity. Risk management aims to manage the risk factors that society may experience and reduce the damage it can suffer from them. Setting the right direction for risk management may result from understanding risk. Flooding is a target factor for resilience in disaster resilience discussions, and a sufficient understanding of flooding can be the start of another discussion.

There are several types of floods, but the floods covered here are mainly in cities, specifically limited to pluvial flooding caused by heavy rain in Seoul. In addition, there are varied flood features. However, flood characteristics to be dealt with here are not meteorological, hydrological or engineering approaches. As a more social scientific approach, it is intended to explain the characteristics of flood disasters in connection with the 'human' problem. If the water ran down in a natural state where there was no one, we would not call it a flood. When the flooding of water becomes a problem by combining 'human' or 'human activities', we call it a 'flood disaster' (Wisner et al., 2004). The reason for dealing with flood characteristics is to determine which factors are emphasised when dealing with the problem of flooding. The flood features covered in this section will be considered uncommon, unpredictable and with uneven effects, that is, an inequality issue.

4.4.1.1 Uncommon event

Flooding is a disaster that does not occur often. This means that the likelihood of a flood disaster is low and that the event of a flood may not necessarily be a disaster. In Korea, rainfall has seasonal characteristics. A lot of rain falls in the summer, but the rainy season is not long. It is very short and intense. Large amounts of rain do not necessarily cause floods. There are areas that are more vulnerable to flooding, such as where the ground is lower than the river level, and such areas may suffer repeated flooding. However, most areas can be considered less likely to suffer from flood damage. Moreover, flooding simply means a large increase in water due to rain, but flood events are caused by the relationship between humans and the environment, and the impact is also exacerbated by the relationship.

A low possibility does not mean that the disaster may not occur. An 'uncommon event' means that it is less frequent, not that it does not occur. Of course, there are places where floods are more likely to occur than other places within a certain pattern. Floods occur more frequently in areas below river level and areas developed adjacent to rivers. These places have long been managed with purposeful measures appropriate for the area. However, floods currently occurring in cities are characterised by becoming more frequent in places that had never been expected (Shin et al., 2011). It is challenging to manage such unexpected disasters.

The fact that disasters do not occur frequently can affect the formation of people's risk perception (Baan and Klijn, 2004). Some people think it has nothing to do with them. To judge from what this interviewee said, he believed that there would be no flooding where he lived.

> *"I do not live in places where floods can occur"* (Interviewee 20).

> *"It has been doing so well these days. That kind of disaster will not happen again"* (Interviewee 5).

People's perception of danger affects motivation to adapt to disasters (Nuttavikhom, 2017). Therefore, recognising the possibility of risk occurrence as low can be a factor that lowers adaptive capacity. However, disasters can also occur in unexpected places.

The possibility of a disaster has a significant impact on decision-making related to disaster management. The efficiency of the drainage system is a fundamental and vital factor in determining the level of flood risk exposure. In areas with frequent floods, consideration should be given to increasing the capacity of the drainage system. In order to improve efficiency, existing facilities have to be replaced, which is enormously expensive. The resources and costs available for disaster preparation have limitations. Public resources have the characteristic of opportunity cost-effectiveness in that increasing the amount and size of resources used in some areas reduces those available in other sectors. In order to recover from a disaster, it is necessary to allocate a certain amount of social resources.

As the employee of the volunteer centre's disaster management department said, it is also difficult for people's attention to be focused on preparing things for what has not yet happened. He pointed out that in a disaster situation it is easy to allocate volunteers or use resources, but otherwise it is difficult to get attention and support from the organisation.

> *"My team has to do things on a preventive dimension, which is difficult … Since disasters do not always happen, it is hard to have a thought like 'do it in advance'"* (Interviewee 1).

In the disaster management field, it is a difficult decision to determine how to assign resources to a potential disaster that has not occurred frequently. Identifying the 'appropriate degree' for an uncommon event to what extent is necessary is the challenge of disaster preparedness.

4.4.1.2 Unpredictable event

Another characteristic of flood disasters is unpredictability. This may not only be true of floods but also other disasters. However, what happens when it is difficult to predict the effects of flooding as an external stressor on the human system may be discussed differently from other disasters. Human systems are complex systems that make causes and effects unbalanced (Baranger, 2000). This non-linearity may make it more difficult to predict the

consequences of a disaster. Several external factors may further increase the damage caused by disasters.

This unpredictability attempts to control external factors that may have negative effects on humans. Therefore, based on various data and existing experiences, many attempts are made to predict the cause factor and its consequences. Weather forecasting and expected scenarios are examples. However, human systems described by complexity have too many variables to consider, and it can be said that it is almost impossible to consider all of their interactions (May et al., 2008). In addition, in order to determine the degree of impact that a disaster will have on the human system, a criterion for impact deviation will be necessary. However, since the state of the equilibrium system as a reference itself is ambiguous (Klein et al., 2013), it may be challenging to determine from essential questions to what extent the appropriate allowance for external influences is.

A flood occurs quite suddenly, so a flooded area will be damaged without being sufficiently prepared. Some interviewees talked about the moment when the water was flowing:

> *"I didn't have time to do something …"* (Interviewee 10).
>
> *"Nothing could be done because the water was flowing so quickly. I just watched helplessly as my home went under water"* (Interviewee 5).
>
> *"If the water comes in slowly, you can do anything. But you do not understand that it happens [by] filling of water suddenly. Water about 2 m high suddenly came in all of a sudden. That is what disaster is"* (Interviewee 19).

They all said that the flood was not something that could be stopped. They even stated that they did not have time to ask for help (Interviewees 5, 10). What is worse is that people cannot expect the risks that might affect them, like the statement below:

> *"A man who had lived over there tried to stop the car from drifting, but was swept down by floodwater. And he eventually passed away"* (Interviewee 19).

When something unexpected happens, appropriate and prompt judgement is required to reduce the damage caused by it. However, as the respondents said above, the risk may not allow people enough time to make such a step-by-step judgment. Moreover, unexpected problems are a huge stressor for people (Baan and Klijn, 2004). The various negative psychological states that people experience may also affect their correct judgement. One respondent expressed his feelings when the flood occurred as follows:

> *"I had seen so much like that, so I was a bit flat"* (Interviewee 19).

As he said, repeated experiences can reduce anxiety. People who are well prepared and know how to act during and after flooding may feel less threatened and be considered less vulnerable from a psychological point of view (Baan and Klijn, 2004).

> *"When I lived in the countryside, my house was swept away by the rain that I experienced for the first time in my life … If I look down the river, cows and pigs are floating away, and houses are drifting away. After that, if it has been an hour since it rained, put a stone on the river. Then, stones are piled up according to the height of the water that has risen over time. To determine how fast the water comes in. If the speed gets faster, everyone escapes. That was old know-how"* (Interviewee 19).

Even if the experience is negative, repetition and accumulation of experience can create shared wisdom to cope with disasters correctly. This is why we need to remember disasters and educate people on how to deal with them. In addition, as mentioned earlier, risk perception affects disaster decision-making. Therefore, there is a need for shared risk awareness amongst the community of people.

There should not be a scenario in which all situations can be under control in disaster management. This optimistic belief can lead to the view that disasters can be continuously controlled with more advanced technical management. It is necessary to acknowledge that disasters can go against predictions of disaster management.

4.4.1.3 Uneven effect

Floods occur in certain areas. However, just because people experience the same influencing factors, even if equal amounts of rain fall on them, the extent to which they suffer damage varies greatly depending on their circumstances. As an 'uneven event', a flood refers to a characteristic that causes different effects. This disparity of damage can differ socially and temporally. Social inequity indicates that there may be groups more vulnerable to disasters, and temporal difference refers to other effects that occur over time. The former problem is one that scholars also describe as environmental justice (Walker, 2012). The justice issue in risk management is linked to sustainability and is more emphasised globally (Agyeman, 2013).

Risks attributed to a flood on society are highly complex. In the short term, the problems that flooding, traffic paralysis and evacuation create are problematic. However, the aspect of the problem may change over time. It can bring on other problems and cause completely unexpected ones. For example, the terrible experiences of flooding can also cause trauma to individuals and create an environment in which various waterborne epidemics can spread. Some people whom I met in the case study areas were concerned that the risk potential could affect the real estate value decline in the area. At first glance, this may not seem to be related to flooding and falling real estate value. However, some people affected by the 2011 Umyeon

mountain landslide seemed concerned that risk potential could affect the region's real estate value decline (Jeon et al., 2011). A real estate agent next to the Arthill apartment complex, whom the researcher met in an on-site survey, said the area was not a place that had suffered flood damage in the past. In addition, when the government tried to designate the affected area as a special disaster area due to the 2011 landslide event, it was reported in several newspaper articles that victims opposed the designation for fear of falling real estate values (Choi, 2011; Hwang, 2011).

The flood damage that occurred in the city has a slightly different pattern from the past. In the past, water flowed out of the embankment and entered the city, causing flooding, while the recent flooding showed that the water in the city was overflowing because it did not flow out smoothly (Sim, 2006; Koh and Lee, 2012). For this reason, lowland, semi-underground and underground spaces are more likely to be flooded.

Not all risk factors create harm. Clearly, large amounts of local rain are risk factors. However, even with equal amounts of rain, there may be areas that are flooded and others that are not. There should be decent control over the many factors that create the differences between these areas. The problem should be addressed that not only are there areas that are vulnerable to flooding, but also that there may be objects that are vulnerable to flooding.

> *"My house was fine, but the household that lived in the basement of my house was submerged"* (Interviewee 5).
>
> *"My home was undamaged, but the people who rented in the semi-basement of my house were damaged"* (Interviewee 19).

Most people living in underground or semi-basement homes are tenants. These are people who are somewhat less able to pay for housing. The basement floor had been a mandatory space to be installed in a building since the 1970s as a shelter in case of an emergency. At that time, it was not allowed to be used as a residential space, but as Seoul became increasingly urbanised from the 1980s, the government encouraged underground spaces to be used as residences. The government relaxed several regulations to allow that. The area of the underground space was excluded from the calculation of the building area that required a development permit and the residential use of semi-underground spaces in detached houses and the multi-household houses was legalised. At this time, the number of underground spaces as residential spaces increased (Han, 2020). However, due to the lack of sunlight, people living there experienced mould and its unpleasant odour problems. Since these underground spaces were somewhat poor as residential spaces, prices became relatively low, and mainly economically vulnerable classes lived there (Park, 2020).

These people were doubly vulnerable; not only did they live in poor socio-economic conditions, but their homes were more likely to be flooded. As of 2018, the number of households living in semi-basements in Seoul was 222,706, accounting for 5.8% of all households (Korea Research Institute for Human Settlements, 2018). The government had already recognised that these basement spaces were highly vulnerable to flood damage. So, new regulations were instituted and underground spaces cannot be built as residential areas when constructing new buildings (Choi and Ku, 2020). However, this policy has been criticised because it does not effectively reduce the number of existing semi-basement households (Park, 2020). In 2011, the number of flooded households in 2011 was about 120, and most of these were tenants living in basements (Cheon, 2012). Those who are socially and economically vulnerable had to bear the burden of flooding themselves.

In order to jointly respond to the damage compensation in the village, tenant victims created a group: the name of it was Namtaeryeong Jeonwon Maeul (Tenant Victims Emergency Response Committee) (Kim, 2012). They submitted petitions to state agencies such as the Seoul Metropolitan Council, the National Assembly, the National Fire and Prevention Agency and the National Human Rights Commission; they protested together in public spaces and sought ways to receive compensation for damage (Kim, 2012). It was said that there was no way for them to be compensated, and all they received from Seoul Metropolitan Government was 2 million won (£1,250) per household. Considering that the damage to each affected household was approximately 30 million won (£18,750) (Kim, 2012), the compensation was far from enough. A respondent (interviewee 19), a village resident, remembered their existence, but he said that they moved on, one by one, and there was currently no one left in the village who had been affected.

Disasters always cause damage to someone, and someone has to put the damage right. In the case of public goods such as roads and levees, the state is obligated to make good. However, it is complicated to determine who should compensate for personal losses; it is difficult to see natural disasters as someone's fault. Even in the case of a human-made disaster, it is complicated to determine what causal relationship caused the problem. Since the Umyeon mountain landslide was a very unusual catastrophic event, the government investigated the cause thoroughly. However, more generally, to be compensated for the damage caused by someone's fault, that is, a human-induced disaster, the victims must prove the 'national fault' by themselves (Choi, 2018; Shin, 2021). It is unreasonable for individuals to maintain that the government has neglected disaster management.

These tenants in Jeonwon Maeul suffered enormous damage. However, even though it was not their fault, they had to bear all the losses from 'damage caused by bad luck'.

Furthermore, the notion that individuals should bear the damage caused by bad luck has long been taken for granted.

> *"They did not even ask for help because they thought they had to do it. People should find ways to live – each of us"* (Interviewee 19).

4.4.2 Lessons from that 2011 disaster

Like Hurricane Katrina in the United States, 'Umyeon mountain landslide' is often used to symbolise a significant disaster in Korea. Such a large disaster may be a good opportunity to improve the problem, because the impact of the damage is so enormous that it gives rise to much immediate interest. As the disaster was in the spotlight for quite a long time, many experts and media raised related problems from various perspectives. In addition, this 'unexpected' disaster has shattered some of the public's prejudices against urban flood disasters. The landslide on Umyeon mountain provided an opportunity to inform people that urban areas may be vulnerable to floods and apartment areas may suffer from flood damage. It would be meaningful to examine how the restoration proceeded following the disaster and what measures were taken afterwards.

Recovery is a set of various efforts to ensure that the affected community returns to its original functional state after escaping from the immediate threat (Pfefferbaum et al., 2017). There are different periods of recovery depending on the damage. The disaster caused a wide range of losses, but here I focus on physical losses, not human ones, and examine each recovery period and related issues.

Immediately after the disaster, much effort was focused on restoring the physical functions of public spaces such as roads. A lot of resources were put in at once to clear the road blocked by soil and repair the damaged structures. The eight-lane Nambusunhwan-Ro was restored sufficiently for cars to travel on it about 40 hours after the accident. Those who experienced the disaster also remembered that the recovery was speedy (Interviewee 5 (Raemian resident), 10, 19a (Jeonwon Maeul residents)). In the process of restoring public space, public and private personnel and resources were invested. In addition to the public sector, other subjects, such as volunteer groups, helped the two affected areas recover significantly.

The restoration of private space was slightly different from that of public space. The restoration of an individual's living space differed greatly depending on the conditions and circumstances. The initial priority of the recovery was to clear away the soil, and during this time, many subjects participated in helping with the recovery (Lee, 2011; Interviewee 10). The restoration period of private spaces such as houses and gardens was similar to that of public spaces, but the responsibility of restoring personal areas was up to the affected individuals. Residents had to clean up houses and gardens filled with soil and sand and dispose of wet furniture. Tenants, victims in Jeonwon Maeul, stayed in other temporary accommodation for a long time to recover from the damage. The damage recovery period was also very different depending on individual conditions (interviewee 19a, 19b).

In the case of the Raemian apartment complex, one building was covered with earth and sand up to the fourth floor, and most of the rest of the damage was concentrated in the common space within the complex. The *a*partment complex was insured for storm and flood damage with monthly maintenance costs; the insurance, through mutual funds, covered to some extent damage to elevators and apartment buildings (Interviewees 12, 13). The spaces in the apartment complex were public, jointly used by apartment residents, but are considered private spaces from the outside. Fences or landscaping facilities surround the apartment complex, so a clear boundary separates the inside from the outside. In that the term 'complex' refers to a particular area where houses are grouped, rural villages also have the characteristics of a complex but are not closed. Apartment complexes are restricted from the outside; in contrast, people are free to enter and exit Jeonwon Maeul from all parts of the village. These differences also affected the recovery process. Because the common space was relatively straightforward to restore, Raemian could use common resources, such as shared funds, which allowed the damage to be somewhat mitigated from personalisation.

The restoration of space took the longest for Umyeon mountain itself, where the original landslide occurred. The Seoul Metropolitan Government used state and municipal funds to carry out construction to prevent landslides, such as debris barriers, dirt barriers and soil nails on various parts of the mountain, and construction was completed in December 2012 (Seoul Metropolitan Government, 2012). Construction was carried out on eight mountains near Raemian apartment complex and Jeonwon Maeul. The question of how to view the scope of recovery remains. If you look at the picture of the bent electric pole (Fig. 4-9), this bent shape will only be helpful in the prevention of recurrence if the soil pours down right at this place the next time a landslide occurs. There is no curved electricity pole near Umyeon mountain except for this one. This pole was only made into this shape because it was the one that was damaged at the time. According to the government's construction, it aimed to prevent landslides' recurrence. However, the focus of this purpose is simply Umyeon mountain, but Seoul is a city with many mountains. There are 26 mountains; the highest is 837 m, and there are 14 peaks with a height of more than 300 m (Seoul Tourism Organization, 2023). The risk of landslides caused by torrential rains still exists on other mountains. It is questionable whether other areas where such construction has not been carried out can be said to be safe when similar heavy rains fell on in other areas. Some experts criticised construction for future disasters without analysing the cause (Kook, 2012). Experts argued that it would have been necessary to conduct a closer investigation into what caused the significant damage and what caused it to increase, and to take measures against it.

Other more fundamental and important matters could reduce and prevent damage and increase the community's resilience; for example, learning lessons from damage concentrated underground, people's failure to evacuate during a 'golden time/golden hour', lack of prior

understanding of shelter, public ignorance of storm and flood insurance, and damage in general. Rather than measures to prevent only certain disasters, careful ways to prevent more fundamental and complex problems will increase community resilience in the long run. It is necessary to think deeply about what to learn from disasters.

4.5 Conclusions

This chapter discusses flooding, an external risk factor for community disaster resilience. In the case of Seoul, the recent flood pattern is very different from the past. The scale of damage from disasters is affected by various factors closely related to the characteristics of large cities in Seoul. Artificial factors such as overcrowding and the use of underground space add to the damage; these were was also identified in the 2011 Umyeon mountain landslide disaster.

Community disaster resilience relates to all time periods: before, during and after disasters. Community factors that cause less damage from floods, which are external stimuli, and to recover faster are important. It has been confirmed that the damage-weighting causes addressed in this chapter can affect the weakening of community disaster resilience in various ways. The two case study areas suffered the same disaster, but there were differences in the degree of damage and recovery patterns. It was confirmed that the difference in housing types between the two case study areas contributed to the difference in damage. In the case of Jeonwon Maeul, the damage was concentrated in households living underground. When recovering from the damage, the Raemian apartment complex, with mutual funds, was more advantageous for economic recovery. However, natural disasters such as floods are not common, and the damage is limited to particular groups, so the damage could be an obstacle to personalisation and the use of social resources in preparation.

Chapter 5. Resilience of what? - Who should be resilient to a flood disaster?

5.1 Introduction

This research continuously raises a question about ‘resilience for whom’. In other words, it tries to think about who the agents of building disaster resilience should be. Disaster resilience refers to the ability of a system to withstand, respond to and recover as quickly as possible from sudden and significant disasters without losing its existing state or function. First of all, the matter of who will experience a disaster and overcome adversity should be raised. In the resilience debate, there has been little discussion of who should be a subject of disaster resilience. In much previous research to date, a community has been presumably brought up as the agent of resilience (Mayunga, 2007; Norris et al., 2008; Magis, 2010; Andrew, 2012; Cutter et al., 2014; Danar and Pushpalal, 2014; Vaneeckhaute et al., 2017; Ntontis et al., 2019). This is due to the fact that communities are used as a contrasting concept to individuals, and collective preparedness and response can be more effective than that of individuals in extreme risk situations such as disasters. However, there has been hardly any explanation about what that very community is.

The subjects dealt with in resilience debates have a diverse range of scales. There are many factors that may have an influence on enhancing disaster resilience, and these can operate on various scales, from the individual to the national level, depending on what they are resilient to or what the factor is. Approaches such as ameliorating inequality (Gotham and Campanella, 2013; Rivera and Settembrino, 2013; Kammerbauer and Wamsler, 2017) or the relief of poverty, from a macroscopic perspective, have to be addressed on a regional or national scale. On the other hand, studies focusing on promoting mental health after disaster are centred on the individual (Southwick et al., 2014; Herrman, 2012). The community mentioned in the disaster resilience literature also has varying levels of scale. Cutter et al.’s (2008) research, one of the most cited articles with the keywords *community resilience* and *disaster*, used a community as a spatial statistical unit (Cutter et al., 2008; Kang, 2014). This is because their later study aimed to assess a community’s resilience numerically (Cutter et al., 2010). Just as in their study, others have treated the unit area for collecting statistical data as a community (Cutter et al., 2008; Kang, 2014). In some community resilience literature, the term ‘community’ appears to be used interchangeably with the term ‘society’ (Norris et al., 2008; Chandra et al., 2011).

The utmost attention in the disaster resilience debate is given to how to build and improve resilience to a disaster. It is inarguable that, the more resilient communities are to disasters,

the less vulnerable they are (Folke et al., 2002; Kaly et al., 2002; Adger et al., 2005). However, to address this question, the matter of ‘what community is’ should be clarified here in advance. Nevertheless, this study is not intended to determine what a desirable community is (and it may not be necessary to define one exact unit) but rather to examine the potential that each subject can have as an agent of disaster resilience. This study will involve two major spatial forms regarded as a community: a local government district and a place-based community.

In the case of Seoul, the research will explore in more detail why the community concept is elusive and examine how that issue would relate to community resilience.

5.2 What people understand as a community

The word ‘community’ is used frequently; however, it is difficult to say that the meaning of the word is used in a consistent manner. In addition, there have been many changes in contemporary society and in the era when ideas of ‘community’ were much noticed and studied in anthropology and sociology. The concept and nature of the community have differed a great deal. As many technologies have developed, space and time constraints have been reduced in people’s communication and relationships. This led to forming network gatherings implemented in virtual domains that transcend time and space constraints, such as the Internet, where community concepts are also used (Delanty, 2003). However, the concept contains so much to cover that it becomes confusing (Clarks, 2007). In Korean (Hangeul), 공동체 /gongdongche/,[11] 지역사회 /jiyeoksahoe/, and 커뮤니티 /keomyuniti/ as a loanword are used to convey similar meanings. The 공동체 is the Korean language of the community. Even though there is a word that corresponds to the word in Korea, the word 커뮤니티 is commonly used by the public without the perception of a foreign language, as it is registered as a loanword in the Korean Standard Unabridged Dictionary.[12] 지역사회 is a compound word coined by combining the words 지역 (regions) and 사회 (social), which is translated into ‘local community’ in English. In many sources, these three words are used in a similar way without any special semantic distinction.

There are some cases of misuse as a desirable attribute given by the word ‘community’ itself. Some construction companies advertise that they have made community spaces by including people’s shared facilities such as a library and a gym in their development plans. For instance, quoting the article title as follows: ‘*Daelim*, equipped with high-class community, residential services’ (Park, 2019), ‘Popular real estate products with premium communities’ (*Korea Business News*, 2020). Both examples show that the construction company utilised the term to promote its properties. Besides, the term ‘community’ is used in the title of the second article to describe the concept of the facility as ‘to have a community’. Many of the facilities are very exclusive because of the qualification for use, such as ‘only available to people living in the area’. Given that the community is meant to be a group of people with a common similarity, it does not mean that these facilities are doing something that allows people to group. It is

[11] Each letter has one syllable in Hangeul. This is a transcription of Korean syllables by Roman orthography prescribed by the National Institute of the Korean Language and is written to help understand the pronunciation.

[12] In the case of a foreign language registered in the Standard Korean Dictionary published by the National Institute of the Korean Language, it shall be deemed to be a Koreanised language (loanword) among the languages originated from a foreign language (Kim, 2017).

questionable to refer to these facility plans as community plans. Moreover, it also uses a variety of platforms to make people gather as a community. Multipurpose spaces or buildings that people can use are called ‘community facilities’, and programmes or applications developed for the public are named ‘community services’.

In the interview survey, the question commonly asked was, ‘What do you think the community is?’ By looking at how experts or the general public perceives the word ‘community’, we can see what characteristics the community has in this time. Furthermore, it is possible to identify the causes and conditions of why the public does not recognise local communities well. The most noteworthy thing about the answers to the question was that many of the respondents said it was difficult to see that the community itself continued.

As mentioned earlier, it is a difficult to capture a single meaning of the concept of community. This semantic depth is true not only in academic debate, but also in the public understanding. In the interview, some respondents did not answer that particular question. Some of them asked back to the questioner why they were curious about what the community was. They do not seem to have had any experience of figuring out what the nature of the community is because it is now a difficult entity to find in their lives. Another respondent, who was a public official, instead asked the questioner what the local community should be. His counter-question arose from the brief explanation of the concept of community disaster resilience by a researcher, and he spoke as if he wanted to have such a community. It has been found that the concept of the local community is not clearly portrayed to the majority of people.

The most notable thing about the answers was that many of the respondents said it was difficult to see the community itself.

> *“Very hard to answer. The basic unit of the ‘Find-Dong Project’, one of the projects being carried out by the Seoul Metropolitan Government, is the* dong*. Wouldn’t that be closer in some ways? Or perhaps ... It could be an electoral district. The cathedral is deeply rooted in the area. They divide the region if a cathedral is to be created in Seoul. These days, I guess it will be separated based on the apartment complex’s boundary and population. It is, however, meaningless to someone who does not attend the cathedral. After all, isn’t it an apartment complex? So, what happens to regions other than apartment complexes?”* (Interviewee 16).

The preceding response is from an urban planning expert, but the local community was not well recognised even by him, who studied the city. He did not explicitly identify the local community, but instead attempted to separate its limits into places. From his response, it can be assumed that small local administrative districts or apartment complexes may be recognised as constituting local communities.

> *"When running countless regenerative projects in Seoul, a small business with a space of 10,000 square metres is also said to be a community development. It is also said to be a community development in large regeneration projects ranging from 300,000 to 500,000 square metres. They do not know what this community is"* (Interviewee 17).

The above respondent was an expert in the urban development field in Seoul, referring to the trend of certain urban development projects being called a 'community development', and he pointed out that they vary in size. The naming of these development projects as 'community developments' is in the same context as the use of the word 'community' in the creation of common facilities discussed earlier. Since the community is a concept that includes the attributes of a 'collected relationship', the word 'community' can have some positive nuance given the characteristics of humans living in various relationships with others. As Williams (1983) referred to the community as the 'warmly persuasive' (p.76), it can be seen that the word is also used to elicit a favourable response from the general public. However, development projects are usually designed to create a specific complex by making use to a certain section of land (Gelézeau, 2007). Therefore, calling them 'community developments' is hardly using the original meaning of the word 'community', or even using it metaphorically or figuratively. 'Community' implies the meaning of social interaction between members, which leads to the formation of relationships amongst them. Creating a place is not enough to foster relationships between people. The disconnection of relationships with neighbours and anonymity in apartment complexes developed by these projects has been dealt with as many different issues (Park, 2013; Kim, 2018; Interviewee 17).

The interviewee then explained why communication is difficult for people to recognise from his point of view, as follows:

> *"Usually, the most basic community structure in rural areas started with the concept of the village. There is a range where people recognise each other. The village or neighbourhood was the most basic community boundary. The most important events for people in rural areas are the events that start work during the farming season, the events that share the joy of harvesting and the activities that they did together became the representative community boundary. People in the neighbourhood meet there … But, after coming to the city with that experience, when they were young, he or she roughly knew who their children were, who they were … regionalism, blood ties, and school ties were frequent, but in the city, communities were different depending on the purpose or range of activities. The cognitive range and the spatial range are separated"* (Interviewee 17).

According to his opinion, the idea of community may have been recognised in the past, but it is difficult to do so in modern times, which may be due to the change in the range and spatial

scope of people's recognition of others. Rural communities could exist because of frequent contact between people in villages and the same spatial boundaries and psychological cognitive range in the system of helping each other work, but now most people are separated from others in residential areas. As Interviewee 17 said, the functional separation of spaces where the space needed is divided according to the purpose of people's activities can be one cause of hindering formation of local communities. The development of communication technology allows people to overcome space and time problems in the way they communicate, creating geographically dispersed relationships (Delanty, 2003). For modern people, the places they need vary depending on the function of their activities, and it is common for them to be used as spaces for daily relaxation. Residential areas are sometimes used with families or other people who are acquainted, but there are fewer opportunities for 'friendliness' because there is less intersection of an individual with people living in nearby areas. The poor relationships amongst residents have also been identified in some of the case study areas of this research, which will be discussed in more detail in the following section.

The following respondents' answers confirmed that the concept of community was more widely used.

> *"We [Seoul volunteer centre] describe volunteer groups as communities. It is similar to a club"* (Interviewee 1a).

According to this interviewee, there is an organisation within the volunteer centre that can be called a community, and its nature is like a club. The term 'community' can also be used as a 'group gathered with the same meaning'. When I asked him again after adding the condition 'local', he said:

> *"I think the local community is really just an alley or village concept. I think it is about people who share a road or a road around a big road"* (Interviewee 1a).

When adding the 'place' condition to the question, the community was mentioned with a concept similar to 'neighbourhood'. The interviewee mentioned a common space called 'alley road', another respondent referred to the 'road' while conceptualising the community.

> *"In order to increase the frequency of meetings, there must be many people walking. But it is rare people that people are walking around the apartment complex. … The word that makes a community comes from what is called everyday life. There is only a frequency where people meet because they meet and face each other in daily life due to just being in the same space. There are very few communities where the frequency is enough to pull out the region"* (Interviewee 17).

The respondents also referred to the 'path' as a place for people to contact. The alleyway, a narrow road leading from the main road to the neighbourhood, is a space where people can

come face-to-face with each other while the gates of various houses are connected along the road. The local community here is Crow and Allen's (1994) community of 'interlocking social networks of neighbourhood' (p.1). In modern cities, however, people living in apartments use cars to move somewhere, so they walk less frequently than in neighbourhoods with alleys. As the interviewee said, a greater number of meetings will result in the frequency of relationships that make people perceive each other. However, we should pay attention to the two terms, 'frequency' and 'pull out the region'. First of all, it is necessary to distinguish the frequency and intensity of encounters. In other words, 'running into someone frequently' is somewhat different from 'meeting with people often'. The former means that the frequency of contact is high, and the latter means an intentional act in which people come or go to meet each other for a particular purpose. When it comes to building relationships with people, the intended behaviour makes a significant difference. In the life of a compacted city, one often encounters with neighbours, while it is rare to meet them frequently. In the second place, the interviewee also considered the community as 'something that pulls out the region'. This indicates that the community is a group that acts together (Silk, 1999; Delanty, 2003). As regards the word 'pulling out', in order to lead a person or organisation to a certain direction, this is necessary for the process of cooperation. This is an important attribute that the community should have as an agent of resilience in this work. In community resilience discussions, communities should be able to have collective capabilities as a unit of collective behaviour (Chaskin, 2008; Norris et al., 2008; Aldrich and Meyer, 2015). However, the problem is that it is difficult to find a 'local community' to cooperate.

Unusually, there was an intentional type of community in Seoul. During the investigation, a new form of local community led by the government has been discovered. The Seoul government has been carrying out 'Community Support Projects' since 2013 to revitalise local communities. The project is a kind of regional development programme where the government provides a certain amount of money to the local community. When a small number of residents gather to prepare a plan to solve their common problems and submit it to the Seoul Metropolitan Government, the government then subsidises expenses after conducting an examination to determine the eligibility for support or feasibility of the project. The government provides the amount yearly and gives financial support for up to three years if it is deemed necessary. This is a government project to induce citizens to pay attention to common problems and to encourage communities to become more active based on experiences. Many types of projects are supported: for example, energy conservation action plans, communal gardening, small library operations and cooperative childcare programmes (Seoul Metropolitan Government, 2013).

However, the communities that applied for this project were more often created for business applications than existing ones (Interviewee 7). When the researcher telephoned the project

manager and inquired about the project, the manager encouraged the researcher to create a community and the government could then provide related information (a call to obtain information about the project, not an interview request for research purposes). It is necessary to check in the long run how these kinds of communities created by the public, that is, not generated spontaneously, can function as local communities. Also, as you can see in the interview below, it is necessary to determine whether a community of a small number of people can be seen as an authentic local community or could develop into a community.

> *"Community sizes vary widely by business, but the minimum number of people is three. And there are many cases where three people apply"* (Interviewee 7).

5.3 Apartment complex as a local community

The size of a neighbourhood is determined by the homogeneity of its material form or spatial qualities (Lewicka, 2010). It may be an appropriate example for Lewicka's neighbourhood classification in the case of apartment complexes in Korea. A certain architectural development company may create an apartment complex with similar colours and shapes in appearance. This is due to the fact that individual complexes are normally separated from the space outside by walls, allowing the limits of each complex to be clearly defined. The neighbourhood is a geographical and spatial division, whereas the community is a human relational division; hence, it is hard to say that the neighbourhood and community are the same, yet they may have overlapping boundaries. A neighbourhood-based community may be perceived as a local community. In this context, apartment complexes with distinct boundaries have drawn the attention of scholars interested in local communities in Korea (Kim and Kim, 2001; Im et al., 2003; Nam and Shin, 2005). I will deal with the content of whether or not the apartment complex can be thought of as a local community in this section, which will be based on data about the case study area acquired from various documents and interviews.

5.3.1 The possibility that an apartment complex can become a community

5.3.1.1 Apartment complexes in Korea

In Korea, an apartment complex is a certain area where apartment-type houses are clustered together, and a complex is equipped with residential facilities, as well as infrastructure such as playgrounds and parking lots.

First of all, it is needed to explain how housing types are classified in Korea. This classification is based on the building code. Housing types are categorised mainly into a detached houses and a multi-unit dwellings. Detached houses are divided into a general detached house that is a single-family, independent type of housing, and a multi-household house that allows multiple families to live in one building. A multi-household house means three or fewer stories, a total floor area of 660 m² or less, and 19 or fewer households. This type of house is classified as a household-family house because there is one house owner, and each unit is occupied by a tenant. Multi-unit houses have different owners for each unit, and are divided into three types: a multiplex house, a row house and an apartment block. A multiplex house and a row house are subject to the same standard floor limit as the fourth floor or lower, but differ in the total floor area. Based on the total area of 660 m², the former means 660 m² or less, and the latter means more than 600 m². A building with five or more floors is classified as an apartment block.

On the Republic of Apartments is a work by French geographer Valérie Gelézeau (2007) who wrote her doctoral dissertation on the subject of apartments in many parts of the city of Seoul with a wide coverage of the various areas of the city. She wondered about the fact that apartments are mass-produced and supplied in Korean cities, while the housing form of apartment complexes is not favoured by the public in France. In Korea, apartments are a typical form of residence in which more than half of the population lives. The residential form of apartments does not exist only in Korea, but in Korea, it has different characteristics from apartments in other countries.

In Korea, urban development is carried out in a zoning method, which distinguishes the purpose of the district. Areas that can be developed as apartment residential areas are those that are classified as First General Residential, Second General Residential, Third General Residential and Semi-Residential in terms of zoning classification. Among these categories, high-rise apartment houses can be built in two or three general residential areas and semi-residential areas. It can be seen that the high-rise apartment complex occupies a substantial area. High-rise buildings are gathered in many places, making it difficult to find places without apartments in most urban landscapes.

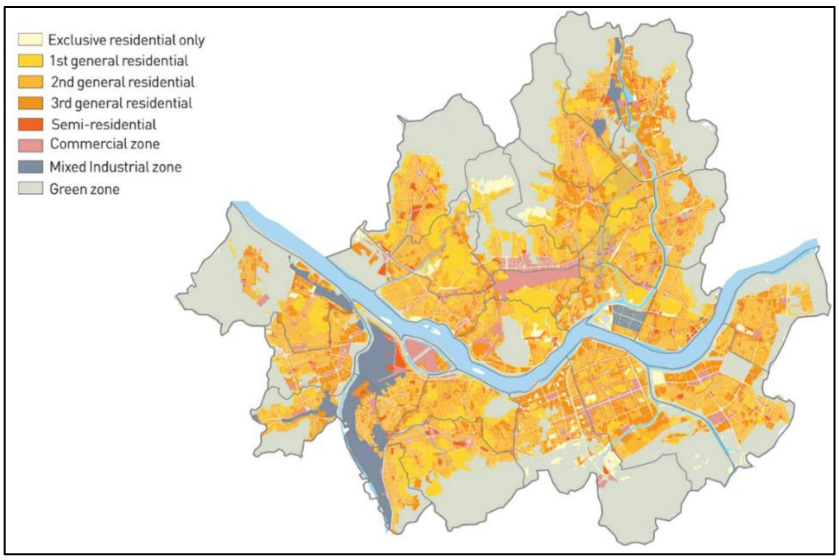

Figure 5-1 Specific use area in Seoul
(Source: Seoul Institute, 2006)

Figure 5-2 Typical landscape with apartment complexes in Seoul
(Source: Lee, no date)

Urban management in Seoul

Once the city has been created, its impact will last many years.

What is the reason for such a lot of apartments in Seoul?

Since industrialisation, two main methods have led urban development in Seoul: redevelopment and New Town development (Kim and Kim, 1998; Han, 2002; Lee, 2008; Kim, 2018). The former urban development method, called redevelopment or urban renewal, refers to a project to change a residential environment by entirely demolishing the buildings of an existing decrepit residential area and rebuilding urban infrastructures and dwellings; whereas the other method's official name is Renewal Promotion Project, but it is more commonly referred to as New Town development. The original purpose of this project was to redevelop

the existing urban districts to build aesthetically improved cities. However, in practice, this method has been used to develop apartment complexes in relatively smaller districts (Interviewees 16, 17; Kim and Kim, 1998). Consequently, Seoul has become filled with high-rise apartment complexes thanks to the two methods. In recent years, there has been a growing number of critical views on these developments (Han, 2002; Lee, 2008; Park, 2013; Kim, 2018), and many attempts to manage the city in alternative ways. Nevertheless, the problem is that they are still the preferred methods of many people and of developers that have investment purposes (Park, 2013). Apartment complexes have been constructed in many areas.

Some experts say that there may have been a time when the 'destroy and rebuild' method was considered effective as a means of housing supply (Interviewees 16, 17; Park, 2013; Kim, 2018). As industrialisation proceeded from the 1960s, many people gathered in Seoul. Whenever housing or urban infrastructure was not sufficiently equipped to accommodate a crowded population, there was much unlicensed, inadequate housing throughout the city. In this period, providing stable housing was the most urgent task of the government, and furthermore, much money for investment was concentrated in Seoul, where land prices were low and development demand had increased. Large construction companies used profitable opportunities to accelerate urban development. Developers began to build condensed apartment blocks so that they would have to put as many households as possible in a limited space to maximise their development benefits (Han, 2002; Korean Planners' Association, 2009; Park, 2013). For people, as users, living in these skyscrapers seemed like the way to live in the city (Gelézeau, 2007), so this type of development became a preferred method for many stakeholders. As the techniques needed for urban development in this way became steadily standardised, this development trend was further pursued (Kim, 2018).

From the government's point of view, these urban management approaches are also useful in terms of the effective supply of infrastructure. The government usually utilises a method called 'Contributed Acceptance' to grant development permits and encourage developers to build the necessary infrastructure of the city, such as roads, parks, schools and parking lots, as a benefit in return. Developers who need to maximise profits want to raise the floor area ratio, and they have no choice but to accept the government's demands. These donated facilities belong to the municipality, which can increase real estate property in this way. An urban redevelopment expert who was interviewed phrased this as:

> *"The chief interest of local governments is only raising the floor area ratio"*
>
> (Urban planning expert (Interviewee 16)).

He pointed out that the Seoul Metropolitan Government, with 'powerful tools' such as permission, local taxes and safety supervision in the jurisdiction, could use these to collect

donations from developers. Additionally, politicians use this as a means of obtaining their votes. ‘To be designated as a Redevelopment District’ is included in the election pledges of local candidates ahead of local candidates ahead of local elections. For Those to whom it is important to achieve visible results within their term it would be not very easy to find a better method of doing so.

Redevelopment become a fairly efficient measure of replacing urban infrastructure. The entire demolition method was an opportunity to replace everything with new construction, and the facilities related to water and storms expanded capacity at this time (Korea Planners’ Association, 2009). Some storm pipes, which can influence water flooding, were also replaced by ones larger than existing capacities as cities were newly developed. One interviewee said that, when he lived in an unlicensed village, the surrounding area had quite often suffered flood damage but that he had never seen flood damage in the area after full redevelopment.

This harmony of interests was put together to enable large-scale development projects around the city. Each development project usually consists of an apartment complex that includes several facilities that can be shared by residents. In Korea, an apartment block refers to a multi-unit house with five or more floors, according to the building laws. It is common for one complex to bear the construction company’s logo or brand name, and, for this reason, there may be apartment complexes of the same name in different areas. Therefore, some apartments are named along with the area name. In the case of a large area, complexes were sometimes created over different time periods by block, and each complex was named after the company’s brand, adding ordinal numbers.

Apartment buildings in Korea have a unique appearance that is different from those in other countries. The buildings are not only great in height but also give the feeling that a dense, tangled group of buildings fill the city. Though each differs slightly in colour and shape, it has the appearance only of a square bundle of concrete. However, there are some differences depending on when the building was developed. In the early 1980s, apartment complexes were developed at a relatively low level, about five stories high, and with square, flat-shaped buildings with constant spacing and arrangement. Afterward, in the late 1980s and 1990s, the purpose of expanding housing and maximising development profits came together, leading to buildings with more floors. The apartment complexes at this time were mainly composed of buildings of 15 stories. Since the 2000s, the concept of dense development has been introduced, and it has become popular to increase the volume ratio of apartments and make the remaining space open. Thus, the number of apartment buildings in a complex has been reduced and attempts have been made to secure more green space. The Tower Palace in Dogok-dong, Gangnam-Gu, which started construction in 1999, began with the shortest building of 42 floors and the tallest building of 73 floors, and the development of such

skyscrapers has expanded throughout the city. However, as can be seen in the figure below, it is doubtful whether the apartment house is a high-rise, but the green area is well secured. In recent years, the value of people's priorities has been emphasised, and the development form of putting all automobiles underground has been emerging to separate cars and people's walking space. For these reasons, it is possible to distinguish the development period to some extent by looking at the form of the apartment complex.

The apartment complexes in the table below are all located in Seocho-Gu and are arranged chronologically. It can clearly be seen that their height has gradually increased. Ironically, the first complex is about to be redeveloped; the second complex is under investigation to be approved for redevelopment, while the last complex was created by a redevelopment project.

Table 5-1 Changes in apartment complexes over time

Period	Changes in apartment building's external form
1970s	 Figure 5-3 Seocho Banpo Jugong apartment building (1973) – 5th or 6th floor (Source: Lee, 2018) Residents' relocation began in 2019 after approval from the government for reconstruction.
1980s~1990s	 Figure 5-4 Sampung apartment building (1988) – 9th~15th floor (Source: Bae, 2018) The rebuilding period required by law is 30 years, and the price of apartment continues to rise due to expectations of reconstruction.

2000s

Figure 5-5 Banpo Raemian Prestige (2009) – 23rd~32nd floor
(Source: Jeong, 2015)

The reason an apartment is preferred as a residence is because it provides convenience to users. Residents can manage their homes at a relatively low cost. They pay the maintenance fee once a month, and the company managing the apartment complex takes care of the apartment. Management companies provide management services – such as repair, cleaning of common areas and security – through their profits from maintenance costs taken from residents. Therefore, residents do not have to take care of spaces outside their homes. Although Individuals may differ, activities that people participate in outside of their homes are hobbies, consumption, and commuting to school or work. What is needed within the living area for these activities will be the Information technology (IT) infrastructure and an effective flow to means of transportation. The IT infrastructure and public transport network are well maintained around the apartment complex. In the early 2000s, wireless high-speed Internet networks were initially supplied from apartment complexes (Kim, 2000). Apartment complexes are required by law to secure a certain number of parking lots according to their size, and the basement floors of buildings are typically constructed as parking spaces. In many cases, the frequent movement of residents in apartment blocks is represented by the line connecting their dwellings to the basement. Furthermore, the length of the route is usually constructed to be the lowest distance possible in order to improve the convenience of the residents.

Apart from the convenience of living in an apartment, the fact that apartment trading is used as an investment technique means is the main reason apartments are preferred (Gelézeau, 2007; Yang, 2007). After the development of the apartment is newly planned, the developer sells ownership of a particular lot. The ownership of a lot refers to the contractual property ownership right that allows the buyer to move in after completion. A person who meets certain

requirements can be eligible to apply for a pre-sale, and must be selected from a lottery to obtain the right to do so. In general, there is a difference between the real estate sales price after the apartment is built and the initial selling price of a pre-sale apartment; the property owner can earn as much as their original profits again by selling the apartment. The real estate market in Korea is very flexible, and as demand continues, real estate transaction prices have continued to increase. For this reason, people's preference for apartments have continued, as winning the apartment sale was considered a means of finance. The government is trying to stably manage the real estate market through various policies, fearing that the imbalance will increase as real estate asset technology continues to speculate. Nevertheless, the behaviour of selling houses that have been occupied by many people and moving them to places where the price of the house can be higher continues.

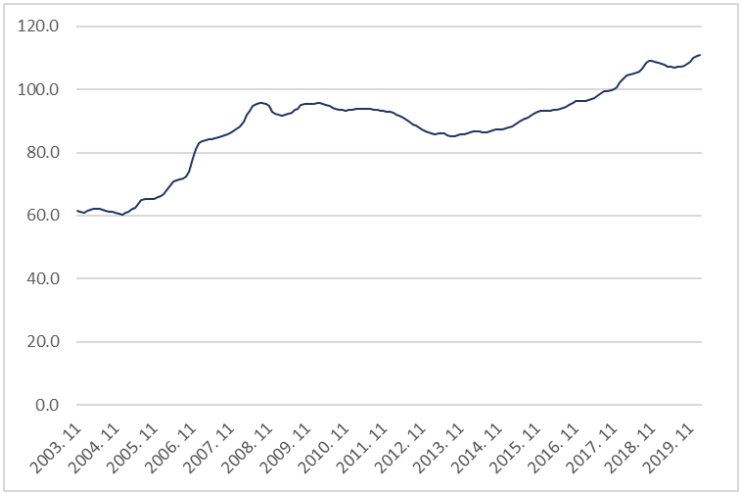

Figure 5-6 Trend of Apartment Price Index13 in Seoul
(Source: Korean Statistical Information Service, 2019)

However, this type of total redevelopment has many problems because it does not consider the context of the city at all. Eliminating all traces of the existing city and creating new apartment complexes breaks the city's history and context.

The apartment complex is a common space purposely created by government policy. When people from different places or backgrounds move into newly built apartment houses at once, they move to the complex together and live their lives in the same space.

[13] Apartment Price Index: The value obtained by converting the apartment sales into a percentage based on the reference point (2017.11 = 100.0) and the price ratio of the survey point.

5.3.2 Constraints of an apartment complex as a local community

Unnatural and artificial 'boundaries' between apartment communities

The concept of community is a group of people, and includes the meaning of 'boundary' that divides people who belong from those who do not. The types of these boundaries will vary depending on the type of community (Cohen, 1985).

Apartment complexes have very distinct boundaries. An apartment complex is a particular type of housing, which means that the complex is created by a specific development plan. Its boundaries do not arise naturally. The process of gathering people within these boundaries may also not be natural. This is because of the apartment's pre-sale occupancy method described earlier. People from various backgrounds gather in the created space, and there is no time continuity between residents in apartments.

Apartment complexes are becoming more exclusive over time. As shown in Fig. 5-7, apartment complexes are generally surrounded by fences or walls, and there are limited ways for people and cars to enter and exit the complex. The door to enter the complex has a device that can be opened digitally, so a specific password or key is required to enter. In addition, devices are installed at the main entrance where cars enter so that only registered vehicle numbers can be recognised and to enter the parking lot. Visitors are required to obtain permission from residents to enter.

Figure 5-7 Each apartment complex is bordered by a wall
(Source: author, 2019)

The community can act in an exclusionary fashion to others (Patterson et al., 2010). A good example is that apartment residents are allowed to use common facilities in their apartment blocks, in contrast to 'outsiders' who do not live there. Exclusion can be the precursor to isolation. This community's exclusionary behaviour leads to the its isolation by restricting

access to information or facilities from the outside. Such isolation may make the community more vulnerable.

Neighbours are those who live close to where people live. There is little reason to form a network in these spontaneous relationships. People have different occupations, different patterns of life and different interests from their unintentional neighbours. Yoo (2018) pointed out that there is no 'desperateness' for residents to form a community.

Frequently moving house

The frequent moving of people would hinder the formation of a place-based community. The proportion of homeowners makes up less than half of the total households in Seoul (42.9% in 2017); in addition, people who live in rental homes move more often than those who have their own homes. As of 2017, the average length of residence for tenant households was 3.4 years, while the average for homeowners was 11.2 years (Ministry of Land, 2017). Also, it takes considerable time to acquire a house (Seoul Institute, 2017). As can be seen in the graph below, almost one-third of respondents said it took more than ten years to buy their own house since they became the head of the household.

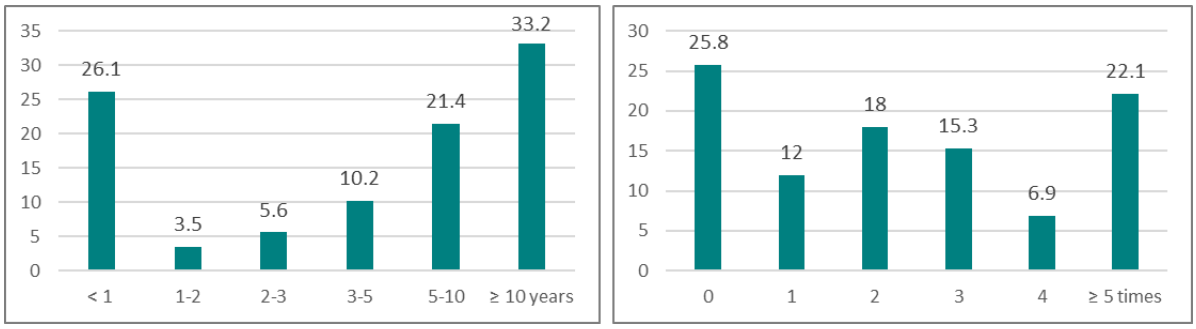

Figure 5-8 The number of years (left) and moves (right) to acquire one's first house in Seoul (unit: %) (Source: Seoul Institute, 2017)

Frequent moving cycles are influenced by the unique rental method called *jeonse* (or *chonse*) in South Korea. *Jeonse* is a method of renting a property that is frequently used by people. It is to rent a residence for a specified amount of time. The distinction between this and other rental schemes is that a tenant pays a very high deposit but no periodic fee, such as separate weekly or monthly rent, during the duration of the contract. A general lease typically lasts one to two years, and tenants can get their deposit back from the landlord once the contract period expires. In this regard, rentals that have not been paid for an extended length of time are collected and frequently used to raise a substantial amount of money by adding to the deposit that is refunded. These lump sums are frequently utilised as the foundation for new housing funds (Park, 2002). The price of the deposit is more than half of the sale price and increases or decreases as the sale price of the house changes.

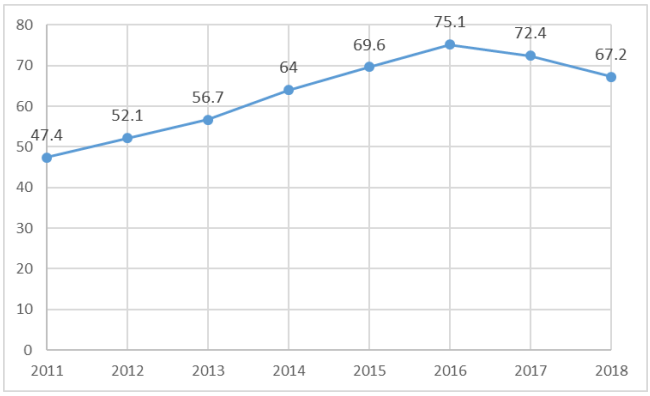

Figure 5-9 The ratio of the *jeonse* rent to the sale price of apartments in Seoul (Source: KB Bank, 2018)

The rental law limits the rental period to two years, and the landlord and the tenant may re-contract under the new contract terms or else the tenant moves. However, a homeowner will usually offer a new contract amount at the end of the contract period. Most property owners usually want to raise the deposit to market prices, so, if the tenant's ability to pay is less than that, he or she has to move. The real estate market in Seoul is very fluid, and securing the stability of real estate prices is considered one of the most significant challenges for the government.

There is also the problem of creating a dull and monotonous urban landscape, with the impact on society of apartments as the preferred type dwelling becoming a problem. The apartment complex normally has a playground or public park for the residents within it. These common amenities are mostly used by residents and are controlled by the management office, which is in charge of handling and running common tasks. These facilities have the characteristics of public goods, so they should be initially supplied by the government. However, when construction companies provide public facilities, situations may arise in which these facilities cannot function as public goods. There have been cases of discrimination in the use of facilities, and these problems have caused conflict amongst people. The construction company that builds the complex provides the facilities, and the costs are borne by the occupants' payments. Residents make a distinction between those who can use them and those who cannot, and Park (2013) emphasises that the boundaries of the complexes make people more exclusive.

The common routes for people living in apartments are their doors to the main entrance of the apartment or the exit to the parking lot, which usually leads to a lift. The time residents spend with their neighbours is limited to the time they are inside a lift (according to some interviewees). People cannot share their lives in this momentary space. There is a difference between recognising someone and knowing someone well. The former connotes that people can distinguish a person who lived as their neighbour from someone who did not, and the latter means that people have information to some extent about someone. Except for where they

live, they have nothing in common, which means that there are no intermediation means for community consciousness or bonding.

In an interview, a woman (Kim, Interviewee 12) living in Banpo Raemian Arthill was asked:

"How many neighbours do you know?" – "Just a few".

Saying she knows them means that she can distinguish them from others, and it would have been difficult to keep up an acquaintance with her neighbours on no other basis than that she sometimes met with them. Most people who participated in interviews did not know even one neighbour's name.

5.4 Village as a local community

In this study, a certain residential area consisting of detached houses was considered a village. The detached house district in Seoul is on the decline. Therefore, there are few detached house villages left. In the graph below, the proportion of apartments increases every year, but the proportion of households living in detached houses is decreasing. The Statistics Korea's Population and Housing Survey (2018) also shows that the number of households living in detached houses decreased from 6.86 million won (monetary unit of Korea) in 2010 to 641.5 million won in 2018.

In Seoul, where the population is densely populated and the price of land is high, it is difficult to find cases where large-scale detached housing complexes are created, such as Jeonwon Maeul. These districts are well regarded in terms of landscape as their low-rise residential complexes are gathered together, and demand continues from people who dream of a rural life, so these low-rise detached houses have relatively high selling prices.

These detached housing complexes are less convenient to use than apartment complexes. The problem of insufficient parking spaces in single-family housing districts has long been raised. The roads in the residential complex are more available to people than to cars. For this reason, people living in single-family housing districts come and go and have many face-to-face contacts with local residents. Residents of Jeonwon Maeul who responded to the interview (Interviewee 19a) also said they knew who lived in the neighbourhood. Tenants among those living in the village often move out, while landlords can know the situation of the village well because of the long periods of residence of the inhabitants.

One resident of Jeonwon Maeul told me about his experience living in an apartment and a village. The fact that the neighbourhood feels ‘like a family’ shows a strong bond between the residents.

> *“In an apartment, people do not even know the people who live next to them. The elevator is a place where people usually meet … People who live here [Jonewon Maeul] go to the mountains together in the morning. We talk on the way up and down. That is how I live here. We went to the mountain together. Since we meet all the time, the people in the neighbourhood seem like family”* (Interviewee 19a).

These detached house districts are on the decline in Seoul. According to Statistics Korea (2015), the proportion of households living in detached houses declined to 24.3% in 2015. The detached houses have been replaced by other types of houses such as apartments and multi-family homes. In addition, as the number of these houses is decreasing, so is the overall area of this type of district (a village form) (Seong, 2017). This indicates that areas like Jeonwon Maeul have become very uncommon in Seoul.

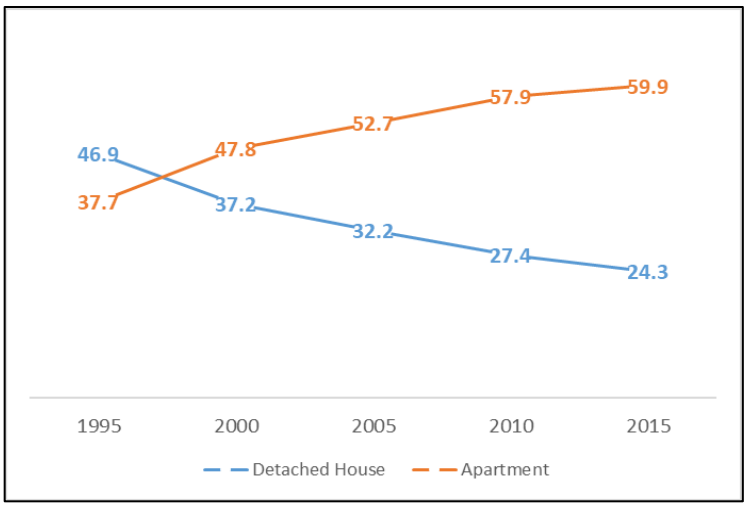

Figure 5-10 Component ratio of apartments and detached houses in Seoul
(Source: Korean Statistical Information Service, 2015)

Church community

The church community was not the subject of the case initially designed for this study. However, during one of my interviews, I met an individual who was the church administrator and they shared their experience regarding the Umyeon mountain landslide disaster. It became clear that the ways of overcoming this disaster within the church community differed vastly from the process in the other two case study areas. It would be valuable to examine the processes of local communities as a comparable example to determine if they faced similar difficulties in cooperation within these cases.

The church community was worthy of attention. The church is a community, but it is a little different from the local community. The church community is not an example initially examined by this study. However, it was discovered through interview that this community overcame the disaster in a slightly unusual way from the process of recovery in other locations. In comparison with the process of overcoming elsewhere, specific points have been discovered, and their contents will be addressed.

The unique community based on religious belief was much more active and flexible in recovering from the flood disaster. They tried to work together in the community to solve the problems they faced more actively. A respondent working at the church said that the church community did not need outside help in the restoration process (Interviewee 11). They were able to cope in a different way from other communities because their sense of solidarity was stronger than that of other groups. This mutual solidarity is derived from the attributes of forming community groups. This community is a group of people with the same religion who are required to have similar principles, rules and morality due to it, and may have stronger relationships with their members.

Voluntary relationship formation also contributes to a more active response. One becomes proud that personal service and dedication through spontaneity can act in the interests of the group. The same purpose between actors to go through severe crises together also makes the mutual relationship more robust, enabling cooperative actions. This bond is a quite different character from that of a neighbourhood or village, which is a boundary distinction that is made regardless of people's intentions by living in a neighbourhood. Although people may be in the same category on a geographical basis as those who live right next to or near them, psychological relationships or close bonds may not be formed at all.

Another reason why the church community had a different way of coping with the crisis was the way it used resources. This community has independent human and financial resources. Religious members have many different backgrounds – demographic, economic and social – except for the attribute of having the same religion. Securing diversity of human resources may be similar to local communities, but differs in terms of useability. The interviewee said that several of the church's engineers solved various problems such as repairing electronic products and draining stagnant water. They donated their specific skills outside their workplace, even though they were not paid for this. What made this possible is probably due to the extraordinary sense of belonging provided by the church community. The church did not receive compensation from the government for financial losses because the damage did not meet the government's standards of compensation. However, the church community were also able to avoid financial difficulties. They had surplus resources in reserve, and they could make up for any deficiencies. Being able to mobilise resources more quickly in times of crisis is discussed as an important factor in enhancing resilience.

The psychological position of the members also made the recovery work much more adaptive. This position was that they were not directly involved in the damage. It was the community that had been damaged by the disaster, not the residence of any individual. Furthermore, no one in the community was directly involved in the damage. There is a substantial difference between the position that 'I can help to solve the problem' and the position that 'I have to solve the problem'. Those who suffer from flood damage in their own homes are responsible for the psychological and physical damage. Psychologically and emotionally, as well as being very confusing, physical and property damage becomes a real problem. A situation that someone has to go through or solve, and this situation and the victim's strong direct relevance, is one that cannot be restored with someone's help. The association between people and difficulties makes a difference in the way they deal with problems. For this reason, members of the church who were not directly involved were psychologically capable of surplus activities. Church members managed their problems by being in the position of volunteers.

5.5 Local government

Government organisations play a key role as primary managers in disaster management. The Korean Constitution (Article 34-6 of the Constitution), the highest law of the country, stipulates that 'The nation should make efforts to prevent disasters and protect its people from dangers' (Constitution of the Republic of Korea, 1988). The state creates a physical and social foundation to minimise the risk of disasters by optimally utilising public resources. The local government has various information about its administrative district and can use various available resources to mitigate these risks. It also has the power to compel citizens or businesses to act in certain ways in some cases. Local governments can function as a catalyst for other sectors to function well as long as they make effective use of their resources.

This study explored the possibility of local governments being in close contact with their areas of jurisdiction as a unit of community to overcome disasters. This approach does not put local governments into the same category as local communities; rather, it is intended to see whether some of the community's required capabilities in terms of disaster management can be shaped by local governments. Autonomous local government is a sub-organisation of higher levels of government, and is also the smallest operational unit of the state's system and financial operations. In this regard, it is the minimum unit to realise the policy goal of 'efficient management of disaster'. The government cannot be free from the criticism that it should take responsibility for repeated disasters. Issues of responsibility directed at the government include calls for a change in its role. In the following sections, I will take a closer look at the characteristics of local governments in terms of the possibility of establishing community regulations.

Before addressing other issues, the first part of this chapter will examine how the Korean government understands and realises the concept of resilience in order to discuss disaster resilience in earnest (section 5.5.1). Then, the next part will discuss the roles expected of the local government in disaster management (section 5.5.2). Furthermore, this chapter will discuss the characteristics of the current local government that either have improved or degraded disaster resilience (section 5.5.3). The last part is about disaster governance, which deals with how local governments relate to other entities in disaster management (section 5.5.4).

5.5.1 Understanding and adopting the disaster resilience concept in government

Repeated disaster damage leads to a demand for change in the way disaster management is carried out. As a result, the government must recognise the need to revise the existing management paradigm. Recognising that damage can be aggravated by a variety of complex processes – for example, not just viewing natural disasters a product of natural phenomena – this study argues that an integrated management approach must be taken to solve more complicated problems.

Many governments from around the world use the concept of resilience as a strategy for national disaster policies and goals (e.g. NFRR in the UK (2016), FEMA in the USA (2012)). There are several explanations about how resilience helps to manage a disaster, but interpretations are still ambiguous. The Korean government is also attempting to introduce the concept to follow the trend of the times. Several government-affiliated researchers have published research reports (Kang and Jo, 2013; Ha et al., 2014; Han et al., 2016) that include the word 'resilience', and they suggest the effectiveness of the concept. In addition, the term 'disaster resilience' is mentioned in the 'Safety City, Seoul Plan',[14] a long-term disaster management plan established in the Seoul Metropolitan Government in 2018. Although the plan was established by the disaster management department, many of the interviewees were very unfamiliar with the concept.

However, as mentioned earlier, the concept of resilience is not being used as a framework, agenda or goal for disaster management in other countries to the extent that the word is unfamiliar even to those who work in Seoul Metropolitan Government agencies. There is also a growing perception in South Korea that a different approach is needed in disaster management. The following terms are highlighted in recent reports on disaster planning published by the government: comprehensive and integrated disaster management (Chen et al., 2006; Berkes, 2007; Berkes and Ross, 2013); preparedness (Patterson et al., 2010); and cross-departmental cooperation and public-private cooperation (Tobin, 1999; Norris et al., 2008; Patterson et al., 2010; Gil-Rivas and Kilmer; 2016). These keywords are also important in the disaster resilience discussion.

Due to a lack of conceptual understanding of 'disaster resilience' in South Korea, it is too early to discuss the concept's utilisation.

[14] This plan is established every five years by the Seoul City ordinance. It is a comprehensive plan for disaster and safety management.

5.5.2 The role of local government in disaster management

There are arguably some aspects of disaster management that can only be accomplished by local government. The government performs actions related to the pre-prevention, preparation, response and restoration process to ensure that people and society are safe from disasters. Since they deal with events in a particular area, local governments will perform similar actions that focus on their region. This means that local governments can play a significant role in ensuring that the community possesses disaster resilience. The role may be direct, auxiliary, mediated or mediated. Otherwise, in some ways, the government could be an obstacle to a community possessing disaster resilience.

Local governments have much information about their jurisdictions, which is an essential factor in disaster management. The local government is where disaster-related information is collected. Collecting data on past disasters is one of the actions that local governments do. Information about disaster-prone areas, vulnerable classes, and routes and locations where residents are evacuated to in the event of a disaster is also managed by the government (Solway, 2004). Residents inform local governments of necessary matters in the form of civil complaints, which gives local governments information about things that have not been improved or overlooked in the realm of government. This information acts as fundamental data for the next steps local governments take.

Using data is as important as recording meaningful and valuable disaster data. Detailed information related to the area in which the local government operates increases the likelihood that local government decisions on disaster management are appropriate.

The accumulated information about disasters, as well as its use, is crucial in disaster management, which includes information on the objective facts of a disaster and practical information. The former describes natural phenomena, such as climate information and data on extreme natural events and their human and physical effects. Various statistical data concerning past disasters has been periodically collected to help users understand and judge such phenomena objectively. The law mandates local governments to publish a disaster white paper annually to record information about disasters. However, these papers carry out no analysis of the presented data (Yoo, 2015); in most cases, they only offer a list of objective facts. Feedback, that is, a critical reflection called by many researchers (Klein et al. 2003; Pfefferbaum et al., 2005) is necessary to improve government responses to disasters, so these papers do not use this data well.

Moreover, the latter information is about factors that reduce the impact of disasters. Such data is also obtained from relevant research or case studies about specific disasters and the recovery. However, there is not much consensus on the need to build empirical data on the

process or experience of overcoming disasters compared with managing records of objective data. Although some studies exist about individual or community disaster trauma, examples of empirical data that have been utilised for effective disaster management are difficult to find.

To ensure citizens' right to know, the government should share with them the information they have retained and managed during their work (Ministry of the Interior and Safety, 2021). Typical information managed by local governments is about disaster-risk areas and evacuation facilities. If areas are considered risk-prone, local governments will choose to restrict or eliminate risk factors by relocating the affected citizens. However, conflicts can arise when the government uses its power; for example, residents objected when local governments tried to designate the affected area as a 'special disaster area' in the event of a landslide on Umyeon mountain. Such conflict might be alleviated by communicating well with residents about the importance of such areas.

Proper management of disaster information, such as recording, storing and delivering it to people, is one of the important tasks carried out by the local government. Fanta et al., (2019) observed changes in settlements near the Vltava river that had experienced major floods in the past; they found that people had forgotten about flood disasters, leading them to settle in places that had previously been classified as dangerous areas. Government-managed disaster information should be able to help people make the right decisions.

Local governments have many public resources available for disaster management. The question of how to use these resources is one of the critical factors in determining disaster resilience (Norris et al., 2008).

Clear standards and procedures are needed when governments use these resources. Government resources should be used optimally to serve the public interest, but the criteria to determine what is in the public interest and how it has been achieved are ambiguous. As public resource users, governments have a great deal of responsibility. However, the lack of appropriate standards of judgement makes local governments more focused on whether they have followed clearly defined procedures rather than on results (Kusumasari et al., 2010), which can lead to inefficiency. Strict adherence to the process, though, can make civil servants avoid taking responsibility for it.

Disaster management requires a more flexible organisation (Klein et al., 2003), but processes within government are usually very inert and rigid, which means that organisations continue to do what they have always done. This tendency can make them reluctant to change. However, disasters are sudden events that are not routine. The greater the risk, the higher the management capability required (Kusumasari et al., 2010), but such higher management capability also represents a change for government organisations. Therefore, inexperienced organisations are forced to make inadequate responses and decisions to these sudden events.

A public official who was interviewed said that if there is sudden heavy rainfall, the entire government organisation will activate its emergency response, and officials from other departments not related to disasters will also be mobilised to respond. According to the *Seocho* newspaper, 14,818 civil servants (accumulative personnel for about ten days after the disaster) in Seocho-Gu were mobilised to respond to the landslide on Umyeon mountain (Kim, K. H., 2011). The Seocho-Gu local government published in its newspaper[15] that it mobilised as much administrative power as possible to recover from the disaster. It was necessary for local governments to try their best to deal with the disaster; however, the fact that inexperienced and uneducated personnel were used in the disaster response was a problem that undermined its effectiveness, resulting in an inefficient response (Fernandez, 2007; Yoo, 2015; Steigenberger, N., 2016). Local governments are required to play a responsible role in disasters, but organisational responsiveness is limited to the central government. Other measures are needed to supplement and overcome these limitations.

Local governments also act as a decision-maker in preparing for disaster. They establish and implement disaster management plans in units of autonomy. However, a plan established by a local government may be subject to restrictions in the overall orientation of the plan because there is a need (Yoo, 2015) to meet the framework plan established by higher institutions. However, through the means of policy, initiatives reflecting the will of local governments are realised. Policies made by administrative organisations should be implemented promptly and in accordance with the needs of actual people; however, they are often created and implemented by other factors. Because policies are heavily linked to political currents, disaster management policies are likely to be pushed back. The head of a local government is elected; the term of office is four years and this can be served up to three times in total. The head of a local government has a strong tendency to pursue policies that can achieve tangible effects relatively quickly because it is important to demonstrate whether he or she can win votes. Disaster-related policies should be expected to work in the long term because disasters are irregular and characterised by uncertainty, yet citizens and government alike often pay little attention to them (Labadie, 1984). Usually, only the governments from areas that have experienced disasters spend time crafting these policies.

More details will be addressed in the other sections, but disaster-related government activities are usually focused on structural measures such as river maintenance and improvement of drainage system performance (Seoul Development Institute, 2011; Yoo, 2015). Most of these projects, which require a relatively large percentage of the budget, cannot be covered by local government funds. If local governments fail to persuade higher levels

[15] A monthly magazine that explains and promotes Seocho-Gu's policies in Seocho-Gu and provides various information about the area.

governments (Seoul Metropolitan or central government) to cover the costs, disaster policy becomes less likely to be realised. It can be burdensome for the heads of local governments to implement projects that are not guaranteed to be feasible as policies.

When asked in an interview by a Seoul Metropolitan Government official if the disaster-related policies in the city change as the mayor changes, the official replied, ‘What we do is almost the same’. His answer showed that disaster-related work is unlikely to be implemented as a highly competitive project.

5.5.3 The characteristics of local government affecting disaster resilience

5.5.3.1. Local government may be effective but not be flexible

A local government is a government agency that has autonomy over a certain area, but at the same time, it also belongs to a higher level of government and plays a role in delegating the work from that level. The districts that will be mentioned in this chapter are located at the bottom of the local government structure and have two administrations: the Central Government and the Seoul Metropolitan Government (see Figure 5-11). A *dong* is a smaller unit in the sub-municipal level of *gu*, but it is not an autonomous administrative division.

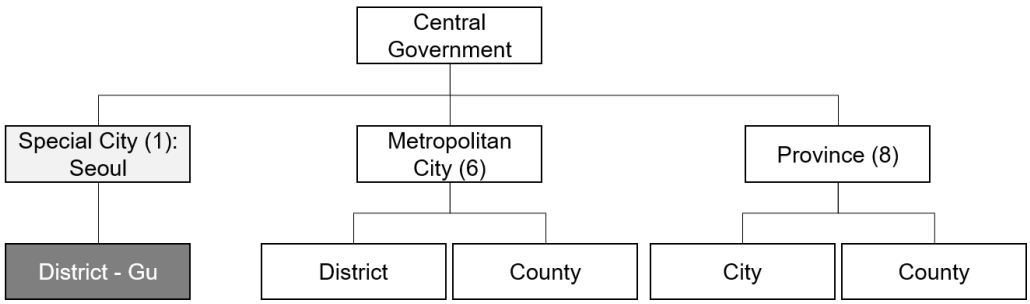

Figure 5-11 The *gu* in the local autonomous structure of South Korea
(The numbers in brackets indicate how many cities there are in each category)

In the figure above, Seoul is the only 'Special City' in Korea. It has a large population (about one-fifth of the total population of Korea) and many functions, with 25 *gus* in charge of running the city. The government is a hierarchical organisation, and local governments have autonomous administrative power, but are also constrained as institutions that perform top-down mandated tasks. The smaller the unit, the smaller the autonomy is and the greater the constraints are.

Local governments are related agencies[16] for disaster management and play a role in establishing and implementing disaster damage prevention, response and recovery plans. Even if both Seoul and the autonomous districts are local governments, the Seoul Metropolitan Government and the autonomous districts have top-down hierarchies and thus differ in their roles. The Seoul Metropolitan Government is in charge of decision-making-oriented tasks that establish policies or plans, while the *gu* is an institution that carries out the plans or policies decided by the higher level of government. That is why the *gu* is important to the area. In an

[16] Related agencies refer to central administrative agencies and local governments that support and cooperate with the Managing Department in charge of crisis management activities (Chung and Kim, 2009) (The National Safety Agency, which was established in 2014, is now the Managing Department in charge of natural disasters).

interview survey, when asked if a Seoul official was ever sent to the scene, the city officials answered:

> *"No, we do not… we only set the direction of policy and implementation is done in the* gus*"* (Interviewee 18a).

The difference between the two agencies' roles was clearly identified in the project implemented after the landslide on Umyeon mountain (2011). In 2010 and 2011, several areas were repeatedly flooded by torrential rains, and the government implemented a storm pipe installation project as a follow-up measure. The relationship and role of the higher-level and lower-level governments can be seen in the implementation of the project. The Seoul Metropolitan Government implemented inspection services to identify damage status and problems in areas where large-scale flooding areas occurred: this is an example of 'identifying the problem'. In addition, the Seoul Metropolitan Government set up a storm shelter (an underground waterway) to allow rainwater to flow into Banpo stream. It judged that the affected areas were lower than the surrounding areas and that rainwater could not escape smoothly. This is an example of the 'planning' part of disaster management. When the feasibility study service was implemented, the feasibility of the project was verified, and the budget execution was determined after the investment review: This is an example of 'determination of implementation', The Seoul Metropolitan Government finally entrusted Seocho-Gu with work on construction. Seocho-Gu managed all matters related to the progress and order of construction. During the construction process, unexpected difficulties occurred, and Seocho-Gu was able to coordinate all the matters concerned in consultation with the Seoul Metropolitan Government. The construction was not completed until the second half of 2018 (Seoul Metropolitan Government Participatory Budget System, 2014; Seocho-Gu Council, 2017).

As can be seen in this example, the difference in decision-making power highlights the different areas over which the two government organisations have authority. Although the smaller autonomous area had a problem within its own jurisdiction, it depended on budget enforcement agencies to diagnose problems to determine appropriate solutions. Even though this project resolved the identified problems, the body was unable to make autonomous decisions and had to hand over decision-making powers to a higher-level organisation. While not all disaster-related decisions are made by the Seoul Metropolitan Government, the role of the municipalities, the *gus*, in disaster management are quite limited. Since disasters are not a regular event, it is difficult to prepare considerable resources to prepare for them (Korea Institute of Administration, 2015). For this reason, organisations that have larger budgets will have more power, and many disaster-related decisions will be top-down.

The sub-municipality depends on higher-level governments for the resources needed for recovery. A sub-municipality has its own resources, but it relies heavily on higher levels of

government. The *gu* has control over four types of taxation, while the Seoul Metropolitan Government has control over fourteen (Kim and Kim, 2011). There is a stark difference in the operating budgets of the two organisations. The *gu* will be provided with expenses in grants if it does work delegated by the Seoul Metropolitan Government.

Because the direction of resource allocation and reach is downward, the *gu* has limitations in its discretion. The entrenched dependence of local governments can eventually undermine the system's ability to identify and respond appropriately in the event of a crisis. As these two governments continue to play their roles in the hierarchy, the entrenchment of this trend causes sub-organisations to develop a willingness as a surrogate rather than a leading agent (Kusumasari et al., 2010).

What matters in response to a crisis, such as a disaster, is making quick decisions on the spot. Local governments require leadership to make these decisions. During a crisis, timely and quick judgements can affect the magnitude of the damage in the area. However, the responding administrative organisation should have clear list of things to accomplish. Field officials who do not want to take responsibility depend on the decisions of the higher-level government. For civil servants, the tendency to avoid responsibility prevents them from making the right decisions on time (Kim and Moon, 2015).

Governments in a bilateral relationship tend to understand their responsibilities from the perspective of their organisations working in crisis management. In other words, the higher-level government believes that their role is over once they have directed policies to the lower-level government. In comparison, the lower-level government understands that its role is to primarily implement the policies the higher-level government has issued. As a result, the different levels of government often do not create a flexible system to collaborate organically in the context of crisis management as a whole.

Government employees work as prescribed by the institutional system, as they follow various laws and regulations. What they have to do is limited, since it is obviously defined. When the researcher called the office in the *gu* to ask for an interview, most officials refused the request or referred them to other departments by saying:

"I do not think that is my job".

Governments are clearly defined by departments, and civil servants know what they have to do. Kusumasari et al. (2010) noted that a significant obstacle for local governments in disaster management is the practice of performing regular tasks.

The Korean government provides efficient services for tasks that are divided clearly by the role of the administration. Public services that the government provides repeatedly over a long period are particularly efficient. For example, some government-issued certificates

(approximately 1,300 types) can be viewed and printed free of charge by most households with only a few certification procedures. If devices such as computers are not available, they can be checked and printed free of charge on unmanned copy issuers everywhere. Driver's licences are issued by the state to recognise and can be obtained the same day the driver passes his or her test. Regarding passports, the district issues them. However, the issuing agency is run by the Ministry of Foreign Affairs and Trade, so it takes about three days to issue and receive passports, even if it requires verification between different agencies. The Korean government has a very efficient administrative service compared with other countries. As such, clearly, repeated administrative jobs built on the boundaries of their work are becoming more innovative over time.

However, an organisation whose roles and responsibilities are clearly divided is not flexible about matters that are not identified, such roles and responsibilities. Government is even less flexible when its roles are defined by laws and systems. However, disaster-related events are not permanent and do not fall under clearly distinguishable tasks; thus, disaster management requires a more flexible organisation (Klein et al., 2003). The government's inadequate response to disasters also stems from this inflexibility.

Citizens require governments to use their powers and resources well. While the government has many procedures and regulations to follow internally, it is also pressured to change externally. These conflicting characteristics can affect the decisions made by the government. The pace of government, burdened with a lot of regulation and many responsibilities, has to be somewhat slow, and having to meet external demands affects the prioritisation of factors other than those that are urgent and important. The political intentions of the heads of local governments and their relationships with other agencies as well as the restrictions on time and resources also affect government decisions, but the 'tangible results' have been the most significant factor in government priorities. Rapid initiatives may mean there is no time for deliberation and these often lead to quick decisions made with incomplete information. Quick decisions and quick implementation can create many problems.

Measures that have greater effectiveness than preliminary work, such as disaster-related work, may prioritise implementation. Policies that have tangible effects that citizens can feel are quick to be implemented, whereas policies that do not are take much longer. The Seoul Metropolitan Government's 'Crosswalk Shade Installation Project' is an example of this trend; it was a policy project that was pushed forward in 2017 when a heatwave was severe in the city centre and became a problem. The project aimed for several shady areas with screens at crosswalks along a six-lane ring road in Seoul. When a heatwave is severe, the temperature that people feel standing on asphalt drastically increases. Even though people wait at crosswalks for only a short time, the shade created by the project helped citizens to cool down.

It took only a few weeks for these shady areas to be installed. However, these screens cause problems, since they can block the drivers' view and may fall over because of strong winds. Now, they are managed by a folding method like an umbrella. Further detailed plans for managing this situation have not been made at this time. This example shows that policy projects are often carried out without using clear guidelines; as a result, many problems can arise. The project was set out by the Seoul Metropolitan Government in the winter of 2017 and its implementation was downloaded to autonomous districts (Seoul Information Communication Plaza, 2017).

The Korean government is considered efficient in general administrative services. In particular, it provides swift administrative services compared with other countries in terms of the speed of its administrative power. However, the government is not sensitive to the dynamic changes facing society in the long term. Governments need thorough standards such as laws and systems for their operations, and these strict standards do not respond sensitively to changes in society. Related systems need to be prepared, and cooperation with other organisations is needed. It takes some time to go through the procedure step by step. This delay in administrative services is also slow to change rapidly due to the time required.

5.5.3.2. Cooperation vertically, but silo horizontally

Many involved in disaster management have argued that authority and responsibility should be delegated centrally in a crisis (UNISDR, 2005; Djalante et al., 2011). Fast and accurate decision-making at disaster sites is critical to reducing risk. In Korean local government, there is no suitable person to operate and lead a crisis (Yoo, 2015); also, many of those involved do not cooperate reasonably with one another, which may reduce their responsiveness at the disaster site.

In the event of a disaster, temporary outside organisations, such as volunteer groups, are involved in the response. These different groups might have had no relationship before the disaster, but they now need to cooperate to effectively respond to it. Effective coordination among the various participants during the response is a significant part of disaster management (Marcus, 2006; Curnin et al., 2015). However, effective communication and coordination among these multiple entities have frequently become a problem in local government's response to disasters (Drabek et al., 1981), resulting in more confusion in complex and dynamic situations and leading to an ineffective response and the waste of resources.

The more significant the impact of a disaster, the greater the need it is for these groups to work together to respond effectively and quickly. Government organisations can coordinate roles at disaster sites. Because there is a major manager of disaster management, they are highly trusted as a leader in other organisations. Nevertheless, as mentioned earlier, all roles

have clear and precise responsibilities. The precise boundaries of the role mean that the scope of responsibility is also evident. The site manager wants to avoid taking responsibility for several problems or negligence in response that to what may arise at the site. Thus, the head of the government's disaster response relies on orders from above, and the top-down command structure delays time to prevent disaster response from being achieved.

The bureaucratic government is more familiar with the vertical structure. Corporate networks within vertical relationships are relatively well organised organically. However, it is not easy to judge whether collaboration with other departments or other related agencies is going well. This can be seen from the responses of Seoul Metropolitan Government officials and employees of volunteer centres in the interview survey. When asked if the government officials were cooperating well with the autonomous district, one employee answered as follows:

> *"Our department [in Seoul Metropolitan Government] is very closely related to the autonomous district,* gu*. As you know, everyone is tied up via Band or KakaoTalk*[17]*"* (Interviewee 18a).
>
> *"You can think of Seoul and the autonomous districts moving together"* (Interviewee 18b).

Although the Seoul Metropolitan Government and the *gus* are in a higher and lower organisational relationship, they said they were cooperative enough to communicate through messenger programs. On the other hand, the volunteer centre staff said:

> *"Every year, there are storm and flood management systems in Seoul itself. And there are 13 departments. A meeting is held in April or May.*
>
> *Of course, in the event of a major disaster, these functions could be combined with the central mayor or someone in command. But it does not usually happen, so each department has its own activities. There is no networking between us. So, collaboration is very formal. It is very formal. The meeting in April or May also ends after reporting what each of us has been doing. Each department is very divisive. There is a department in charge of software and hardware in Seoul, and disaster is divided into different parts of each other, so I do not think we can create synergy"* (Interviewee 1a).

To sum up, government organisations are very organic vertically and fractionally divisive horizontally. Although all departments related to disaster management have the same purpose of flood risk management, their roles are very disparate. These organisations have become accustomed to hierarchical methods, and bureaucratic patterns of governance have long been

[17] A popular messenger application in Korea.

embedded in them. It is difficult to expect organisations with less experience working with other departments to effectively cooperate in a disaster.

Redundancy, lack of cooperation and avoidance of responsibility among disaster management departments, such as local governments, fire departments and forestry offices, are issues that have been criticised in Korea's disaster management (Chung and Kim, 2009; Yoo, 2015). In the aftermath of the landslide on Umyeon mountain, the issue of organisations trying to avoid responsibility came to light. Initially, Seocho-Gu claimed that it was not responsible for the landslide because the mountain was under the jurisdiction of the Korea Forest Service (National Institute for Disaster and Safety, 2013), even though Umyeon mountain is located in Seocho-Gu. Such an overlap in organisations' responsibilities can lead to their avoiding taking responsibility. In addition, the process of identifying the cause of the landslide problem on Umyeon mountain turned out to be one of the reasons for the lack of cooperation between relevant organisations. The Korea Forest Service had already designated Umyeon mountain as a highest-category danger zone, but this important information could not be shared with the local governments in Seoul and Seocho-Gu (Park and Jung, 2011).

5.5.4 The great challenge of disaster governance

Many argue that it is necessary to establish a governance system for disaster risk reduction (DRR) (Brown and Westaway, 2011; Djalante et al., 2011). Disaster governance is the participation and cooperation of stakeholders for the public purpose of disaster management, which is why resilient and adaptive governance can help reduce community risk (Djalante et al., 2011). The pattern of change becomes more complex, and many social systems must learn and adapt to this change (Folke, 2006). In addition, the risks and disasters caused by these changes are difficult to cope with and are resolved with only a single capacity. Several agencies need to participate and collaborate to deal with common problems. The resilience discussion ideally sees a well-established governance system that allows the community to build and strengthen resilience against disasters (Combaz, 2014; Kapucu and Sadiq, 2016; Tiernan, et al., 2018).

In the governance discussion, it is believed that multicentric, multilayered organisational structures can complement each other's functions. Usually, governments have vertical structures as bureaucratic organisations, complementing the limitations stemming from these vertical relationships by interacting with different external agencies (Folke et al., 2005). However, Korea's disaster management agencies have a structure in which various related organisations share their roles within the government rather than creating a system with various external agencies.[18] However, these government-affiliated organisations operate in all individual vertical laws, and each department has its tasks defined and systematically appears as a vertical administrative organisation (Chung and Kim, 2009; Yoo, 2015). Such a government organisation would have to be a top-down command and control rather than acting horizontally in operations and would make it difficult to respond quickly by reducing the site's responsibility as previously addressed.

[18] According to Chung and Kim (2009), the organisational system invoked in Korea's disaster management can be divided into supervising agencies, related agencies, working institutions, public mobilisation personnel, civil society organisations and volunteer organisations. Except for civil society and volunteer work, these institutions are public-sector institutions that perform different functions. For these institutions, crisis management activities are defined by law and the governance system. The organisations related to floods and storms are the central administrative agencies responsible for flood disasters, with the Central Safety Management Committee (chairperson) and the Ministry of Public Administration and Security (chairperson) supporting the agency's activities. The supervising agency and related agencies are the central government, and the local government is the working institution responsible for disaster management under the Act (Basic Act on Disaster and Safety Management). In addition, other organisations manage risks, such as the Korea Water Resources Corporation and the Korea Rural Community Corporation.

Korea's governance system is very state-led. Much of the literature has also raised state-led and centrally dependent structures in governance as problems (Lee et al., 2010; Shin et al., 2011). This was also confirmed in this field research, and the Seoul Metropolitan Government funds the Seoul Volunteer Centre. Volunteering is a non-profit and a representative private-sector activity whereby local communities help the public good. If these institutions are run on government resources, they might also be managed by the government. Audit procedures are also necessary because these institutions use national resources. Since volunteer organisations are non-profit, it would be not easy to maintain continuity in operation. In this respect, government assistance can contribute positively to the stability of the organisation. However, at the same time, government support may hinder autonomy in terms of the organisation's operations.

In Korea, the government and citizens are somewhat accustomed to the government-led method of operating. Disaster management is the domain of government and a kind of government service; the government is a service provider and citizens have been recognised as consumers. Awareness of these roles can be a hindrance to the development of collaborative governance. A researcher at the Seoul Institute pointed out in an interview survey:

> *"The Seoul Metropolitan Government does not want to let go of their authority"* (Interviewee 16).

Osbourne and Gaebler (1992) highlighted that a fundamental change in the role of government is necessary for it to be more flexible in modern society. They emphasised that the role of the government is to steer rather than row and that it is more important to facilitate other players to function properly. It is recommended that the government should give the community proper authority so that it can take the initiative.

There is also an absolute lack of experience in coordinating interests in both public and private organisations. The preferred way citizens participate in government is through public notices, reading and public hearings (Yoo, 2003). Reading is a method of informing administrative agencies about the decisions made in a certain period, but it does not collect citizens' opinions in a way that requires active participation from citizens. In addition, public hearings are a way for local governments to publicly listen to opinions when making decisions, in which the organisation explains the relevant content; at the end is the process of gathering opinions from citizens. However, it is pointed out that the opinions of experts and citizens from this event are not reflected well in the project because it is usually a one-off method and is a short-term event at the end of the process, rather than a two-way discussion (Environmental Policy Assessment Institute, 2015). As a result, there is no way to reflect residents' opinions at the planning stage of policies or projects with the current civic participation method.

It is difficult to properly reflect the opinions of citizens in a very limited and formal way of participation. Korea's civic engagement is still minimal, and the public are used to this method. It is generally agreed that the government needs to reflect citizens' opinions in the government's policy process, but the methodology for doing so is still insufficient in terms of consideration and practice. Reflecting citizens' opinions is a process that requires a lot of time and resources. Various opinions can cause inconvenience and additional work to be done by administrative agencies.

The village building project conducted by the Seoul Metropolitan Government is meaningful in that it is an attempt to induce the community to develop its own self-sustaining capabilities. However, there are also limitations of short-term and government-led projects. The following interview responses point to a problem that the town-building project is not sustainable.

The public officials who were interviewees working in the Seoul government introduced the 'Supporting making a community' and 'Going to the community service' projects as governance models (Interviewees 7, 18; Yoo, 2018). These two projects are policy initiatives actively being pursued by the present government. People who positively assessed these projects were expecting residents to cooperate to utilise the powers granted them appropriately, and by doing so, their network of relationships would expand (Yoo, 2018).

There are various private organisations that help or work with the government. Two organisations are examples of private organisations: the Volunteer Fire Department and the Regional Autonomous Disaster Prevention Corps. However, these organisations were organised by the central government, not to fit the title of 'autonomous organisation'. Those who were not used to forming their local networks were rather accustomed to the networks created by the government and those methods (Interviewees 1, 2).

Policies that the government implements should reflect the needs of citizens, but it is difficult to expect this if the direction of communication flows only one way. The government tends to rely on communication media as a means of transmitting information about disasters. It is clear that these media are very efficient means. The penetration rate of mobile phones in Korea was 100%, and among them, smartphone users accounted for 95% (Pew Research, 2019). The disaster text message provided by the Ministry of Public Administration and Security provides various information about the area based on the location information of the recipient. The recipient receives information offered in a text through a one-way channel. The receiving of notifications also give the recipient no option; even if the notification option is silenced or vibrated, a warning text about the risk of disaster is delivered with a loud alarm sound. This would be a highly efficient information delivery system. The more information people have, the more confused they become due to the choice of information. Information distributed from a single source may be effective because it can reduce this confusion.

However, this requires a strict condition that the information must be reliable. This poses a massive challenge to the government, the information provider, as to whether the risk is accurately predictable. Fearful and embarrassed people want to know what to do when a dangerous situation arises. In a situation where the tendency to depend on information increases, it is imperative that accurate information is delivered promptly to people at risk.

Unfortunately, given the fact that one of the aspects of the current disaster is unpredictability, this information delivery system structure would have a possibility of incurring other risks. In the 2011 Umyeon mountain event, people had not received any prior information. The Forest Service, which had predicted the danger, argued that someone sent text messages on landslide warnings to an official in Seocho-Gu four times, but the official who should have received warning messages denied that. The process was carried out by a message transmission system that was used as a system of emergency communication between the two agencies. The problem, which could have been a systemic error, was said to have been a long conflict between the two organisations, whether or not it was an individual mistake.

In the event of a disaster, the information citizens need is not only about the risks of emergencies but also risk avoidance. People need information about where to evacuate out of danger and where they can get the help or service they need. Information can be useful only if it is perceived by citizens before disaster strikes. However, none of the respondents knew about this information. When public officials were asked about how disaster information is transmitted to citizens, they said:

“It is all posted on the website”.

The websites contained much information. However, every department dealing with disaster issues had its own web page. That means that in order to obtain specific information, it is necessary to search a web page providing the information accurately. Of course, a disaster management web page run by the local government showed all the information related to the disaster at once, such as local weather and the location of the shelter, but it required several clicks to go to the page to get the disaster information. Information provided on a web page requires active effort from information recipients. The public cannot obtain the information unless they visit the web page with intention. It is hard to expect ordinary people to prepare themselves in advance for unexpected events. The government should promote the information or educate people that such preparation is essential. However, the government has neither had nor planned a safe education programme.

5.6 Conclusions

The main finding from this chapter was that not only residents but also experts and government officials did not know what the local community is, which may have led to the problem of it being unclear who could play a role in dealing with a disaster.

Residents did not perceive the concept of community well, and those living in the apartment complex perceived this concept more vaguely than those living in Jeonwon Maeul. In Korea, apartments are created in the form of a complex. Complexes built using a full-scale redevelopment method hinder spatial continuity. People from different backgrounds and contexts live in one space, making residents consist of heterogeneous groups with no common culture or history. In addition, due to the structure of the buildings and the roads, it has been confirmed that fewer opportunities for contact between neighbours have some effect on the very narrow range of neighbours that apartment residents know. The apartment complex has not become a local community as a form of mutual cooperation, although it has obvious regional boundaries. One of the reasons is that residents lack the opportunity to do local work together because a specific entity is entrusted with the common work of the complex.

Jeonwon Maeul had a slightly different spatial structure from the apartment complex, and the big difference was that the village's boundary did not work exclusively with other areas. The apartment complex had minimal outsider access. In contrast, people could enter and exit Jeonwon Maeul from the outside. In addition, the residents here had a wider range of acquaintances. It has been confirmed that alleys where people can come and go and meet each other have an effect on expanding the scope of residents. Jeonwon Maeul has village representatives elected by residents, and a representative is involved in local affairs. However, pre-existing neighbourhood ties have not served as a 'local community' in disaster issues. These two case study areas do not have disaster resilience because there are no recognised local communities amongst residents. As mentioned earlier, several community roles are discussed as being related to enhancing resilience. However, other subjects than the local community, such as social organisations or institutions, may play such roles.

The local government, which was in charge of the primary response to the disaster, is also mentioned as a local community in the discussion of disaster resilience and is expected to create a cooperative relationship with the local community. It has been confirmed that residents also regard the autonomous government as the main subject of disaster management. However, due to the nature of the organisation, local governments with vertical structures and a lack of horizontal flexibility in their work may need to be more efficient when dealing with disasters. Since the work is inert and regulated, the clarification of responsibility is necessary and the tendency to avoid it is common. Because horizontal cooperation with other subjects is difficult for these local governments, and collaboration with residents takes much time and

effort, partnership with residents is often superficial. Cooperation in disasters is visible when an event occurs, so subjects with insufficient prior experience do not have the motivation and opportunity to cooperate in the event of a disaster.

The disaster resilience literature mentions the community as a significant subject. However, various discussions may overlook the problems that may arise when the local community is unclear, as in the case study areas of this research. The public uses the word ‘community’ to embrace a wide variety of concepts. Although a ‘place’ is added to the concept of the local community, this did not help to clarify the meaning. Rather, it is used as a concept encompassing various regional areas without specific boundaries and meanings. Using disaster resilience and community terms together may add more confusion to the resilience discussion, which is criticised as it requires more clarity. This chapter suggests that it is necessary to discuss what the local community is – an essential and fundamental question – before proceeding to the other main issues.

Chapter 6. What makes a community resilient to a flood disaster? Potentials and obstructions to building community resilience

6.1 Introduction

The community is thought to play a significant role in disaster resilience. In times of crisis, such as natural disasters, the various potentials of the community are known to positively influence efforts to avert risk. The value of the local community expected by disaster resilience would be to reduce the impact of the disaster by revealing its potential. However, explaining community disaster resilience with a single theory may be difficult because each local community has a unique historical, cultural and social background. The previous chapter discussed the two case studies of local communities in Korea. Of the two residential areas, the apartment complex was discovered to be poorly recognised as a local community by those who lived there.

Following that, this chapter will address how the lack of recognition of such an acceptable local community, dubbed a 'not well-recognised local community', affects community disaster resilience. There are three primary points to debate. The first is related to a lack of local community experiences. Residents' lack of recognition of a local community resulted in fewer diverse experiences as a local community. Mutual support and helpful activities were diminished in disasters, and there was no framework for making joint decisions. Second, many of a disaster's negative impacts become a problem that individuals must cope with. If we assume there is widespread agreement in the community, then we can see how it will be possible to ensure that community resources are used appropriately during the disaster, and various mutual aid strategies will be possible to implement. Finally, I talk about the lack of a learning process from previous risks. In theory, social learning enables communities to make better risk-management decisions, and communities can actively and actively develop resilience (Cutter et al., 2008; Berkes and Ross, 2013). Social learning is also important for risk perception, because it makes it simpler to mobilise the required decisions or resources within the community to create and implement risk-reduction plans (Paton and Johnston, 2001). I will discuss lowering risk awareness and the long-term viability of social learning amongst residents.

6.2 A lack of experience as a community

6.2.1 A community recognised by residents

As a local community, the term ‘absence of experience’ has two meanings: cognitive and interactive. The first implies that inhabitants have little awareness that they share a community with their neighbours, while the second indicates that the former will influence their interactions with their neighbours as members of the same community.

Suppose that residents do not recognise the local community. It may be difficult for them to have a shared local identity, even if they share the same location and perceive local concerns as common problems. Local/place identity is an element that conceptualises local communities. The concept of place identity refers to how places allow people to identify themselves (Gurney et al., 2017). A place can be a boundary for categorising people, establishing a commonality between people living in the same area (Lewicka, 2010). A place identity based on this commonality allows people to feel a sense of belonging. It is argued that when a sense of belonging works desirably, community members can be a factor that creates a shared understanding and leads to collective action for a common purpose (Weil, 1996; Räsänen et al., 2020).

Before discussing the place-based community, it is necessary to determine, in the case study area, whether the place affects the local identity of residents. In terms of whether a site enables residents to establish a local identity, there was a modest difference between the two regions. In the case of Jeonwon villages, detached house buildings within a certain area were divided into one village and named. It is uncommon for a detached home district to be named as a single village, although when a district is planned, the area is occasionally referred to as a single village. In the case of apartments, however, it is more typical for them to be built in the shape of a complex. As stated in Chapter 5, an apartment complex is a complex created by a specific construction company. The residents of both areas live within clearly defined boundaries.

According to an interviewee who lives in Jeonwon village, the residents of the village are generally older, with the majority of them having resided there for a long time. They knew everyone who lived in the village and shared their everyday lives with their neighbours who had been there for a long time, which was unusual for them (Interviewee 19). Tenants, on the other hand, frequently migrated to their dwellings due to the stipulated lease duration, despite the fact that they live in Jeonwon village. Building relationships with current inhabitants could be short-lived (Interviewee 19). In contrast, inhabitants in Arthill apartment complex were frequently unfamiliar with one another (Interviewee 12).

One of the interviewees explained why they were unaware of the local community.

> *"When we were young, people my age had lived in neighbourhoods that resembled rural places. There was a* bansanghoe *[a kind of regular community meeting]. We do not have that kind of intimacy with our neighbours where we live today. So, in a metropolis like this presently, I believe people may sense a lack of community"* (Interviewee 17).

Korean society has evolved in a relatively short span of time. The majority of the country was ravaged in the 1950s as a result of the Korean War, but Korean cities are today relatively modernised (Kang, 2005). According to national laws and regulations, they are liable to reconstruction 30 years after construction, while the average life expectancy of a Korean house is less than 29 years (Jung, 2018). The city changes a lot because of the short building life and reconstruction projects.

> *"When the building is old, it will be redeveloped immediately next time. Because people have no experience in improving and reforming their dwellings, they are less attached to the area or community"* (Interviewee 16).

Middle-aged and elderly persons may be experiencing various changes in the city of their upbringing as well as the city of today. Their childhood appeared similar to that of the countryside around the 1960s, and they enjoyed relatively tight relationships with their neighbours in the same neighbourhood (Chae et al., 2018). During the 1980s, as urbanisation spread throughout the city, the administrative unit known as a *ban* played an essential role in regional exchange (Kim, 2014). The Eup/Myeon/Dong office, a small-scaled local government body, designated roughly 50 houses as *ban*s and ran *ban*s to carry out the government's programmes. A neighbourhood meeting called the *bansanghoe* was run based on the *ban* unit. The meeting was held on a regular basis, usually once a month. Despite the fact that it was designed to ensure the efficient delivery of government projects, the people talked and resolved a great deal during this community meeting (Choi and Jang, 2002; Yim et al., 2003). They talked about and decided on regular everyday activities including garbage disposal, collection techniques and cleaning sequences for common areas like staircases and corridors. Although *bansanghoe* have been criticised for being utilised by the state to mobilise people or for frequently becoming interest groups (Kim, 2011), at the time, it was evident that neighbourhood meetings were the foundation for residents to be viewed as members of a local community (Choi and Jang, 2002; Yim et al., 2003). However, with the late 1990s government reform, the small-scale government that administered the *ban* was abolished (Kim, 2014), and with numerous changes in society, such as urbanisation and moves towards nuclear families, few types of these community meetings persist today. Relatively older people who have gone through all of these changes may believe that the community in which they currently reside is

different from the ‘community’ in which they used to live, leading them to believe that there is no such community in their current area.

6.2.2 Sharing information in the crisis situation

The empirical research on disaster resilience demonstrates that ‘reliable’ access to information in times of crisis is critical (Norris et al., 2008). Smit et al. (2001) considered information to be one of the factors influencing a community’s adaptive capacity. In times of crisis, timely and accurate information may influence people’s decisions. However, in extremely urgent situations, such as natural catastrophes, this technology-dependent information may not be provided in a timely manner. Even during the Umyeon mountain landslide, the forecasting system did not work at the appropriate moment because the administrative communication process failed.

There is target-restricted information, depending on the type of information, in which the usefulness of information is limited to a specific object. Information such as compensation payments apply solely to a subset of the disaster’s victims. Such information necessitates the beneficiary actively seeking it. However, because it is difficult for the information provider to designate an object in the case of such information, there may be a restriction to information delivery. Although such information is disseminated through the media, there may be information gaps. In the case of compensation, for example, the victim must apply directly to receive it.

In an emergency, there is not enough time to determine whether the information being disseminated is accurate. However, it has been discovered that during times of crisis, people have a predisposition to share knowledge with family members or others with whom they have strong social ties (Longstaff, 2005; Aldrich and Meyer, 2015). According to such research, when a disaster occurs, information is more likely to be reliant on already established networks. On the other hand, this also implies that this type of mutual information exchange may be difficult to carry out in a partnership that does not share any common ground.

In the interview survey, I asked respondents who they would contact first in the event of a tragedy. The vast majority of respondents stated that they would contact state authorities such as local governments (town offices or district offices) or fire departments if they had a problem. No one responded that they would get in touch with anyone such as an acquaintance or family member. When people are faced with a crisis, the first persons they will contact are those who can assist them. National disaster management systems must be able to process a wide range of disaster information fast, yet in times of crisis, it can be impossible to meet all demands. The larger the crisis, the more difficult it may be for the nation’s relief efforts to function successfully at the appropriate moment. Even during the Umyeon mountain landslide, it took a long time for public rehabilitation efforts to be completed (Interviewees 10, 11, 12, 19).

It is possible that the state will not provide prompt assistance in situations such as those that occur immediately after a natural disaster. Depending on the circumstances, people may be placed in one of two situations: either they must overcome the crisis on their own (as will be discussed more thoroughly in the following section), or they are assisted by other people or organisations other than national institutions. If people are in the former situation, they may have less adaptive capacity to disasters. People acting in times of crisis to assist others who are exposed to comparable risks make the best options possible, such as evacuation suggestions, according to Norris et al. (2008). The stronger a person's social links, the more probable it is that they will be assisted. Due to the fact that communities with strong mutual network relationships are able to supply and receive assistance in times of crisis (Aldrich, 2012), it may be difficult to anticipate this in a state where there are fewer community-based social connections. Participants in this study who reported experiencing a crisis in the study's case region also stated that they did not expect assistance from their neighbours.

> *"(Question: did the inhabitants offer each other assistance at the time?) No one did. Every household was busy to handle by oneself"* (Interviewee 5, resident of village).

> *"Neighbours did not assist one another. In fact, there are more instances where residents are unaware of who lives upstairs or downstairs"* (Interviewee 12, resident of Arthill).

6.2.3 Lack of governance experience

Governance is a critical component of disaster community resilience (Folke et al., 2002; Pendall et al., 2010). Decision-making through the cooperative relationship of multiple stakeholders is thought to be more efficient in the resilience discourse dealing with uncertainty. Much of disaster management is regarded as the government's domain. However, general government works must be followed by procedures such as laws that make it difficult to respond to changes flexibly (Gao, 2018). Therefore, disaster management may also require other strategic responses in that it must deal with changes. The participation of various subjects is one of the strategies that emerge in this respect.

The section on local governments in the previous chapter (section 5.5) addressed the concern that the method of citizen participation was very limited. There are various methods of citizen participation, but this section focuses on the two forms of citizen participation mentioned by respondents in the case study: civil complaints and public hearings (Interviewees 5, 16, 17, 19). Individuals can communicate with the government via the method of filing a complaint, but it may be limited in accepting complaints. Citizens and the government become the relationship between the claimant and the respondent since the civil complaint is a request for national service (Ministry of the Interior and Safety, 2022). If the requirements are within the given range, they will be handled appropriately; otherwise, the request may not be accepted, or additional procedures and time may be necessary. However, this communication has limits in terms of properly identifying citizens' problems. The request is processed in two ways: the state either accepts the request or does not. Therefore, it may be difficult to accept matters beyond the scope of services that the state can provide. It was stated that the damage caused by the landslide on Umyeon mountain was exacerbated since the previous typhoon's damage was not handled in a timely manner. A resident who recognised the problem repeatedly demanded that the government correct it, but the government did not resolve it (Jeon and Choi, 2011). The previous typhoon, *Kompasu*, hit the area in 2010, and it is reported that trees were ripped out of the mountain by severe gusts. The complaint was not processed until a year after the storm hit, since the rehabilitation work, which was costly, was beyond the ordinary administrative service region,. This example shows that the administrative domain may sometimes be inflexible in dealing with problems related to uncertain risks.

On the other hand, public hearings are a way for the government to communicate with multiple people. They are not only short-term and ex post but also a government-led method (Interviewee 17). The public hearing is an institutionalised citizen participation method, and anyone can participate (Lee, 2018). However, it takes place in the form of experts in related fields sharing opinions, and some citizens attend as the audience. Due to its formalised method, it is difficult to reflect various opinions of citizens through it. For both methods, it can be seen

that the measures to identify and solve common problems in the region are somewhat insufficient. Critics continue to point out that the process of reaching social consensus in Korea's governance method lacks a democratic and public aspect (Chung and Kim, 2009; Lee, 2018).

Although there is a consensus that governance is necessary in Korea, it is not well established. It can be inferred from the answers of the two experts that the governance method has not yet been firmly established in Korea.

> *"But from my point of view, there are still a lot of tendencies to push or mobilise when a little too unprepared. Of course, it is better than not, but in some cases, it can be wrong … But basically, this part of direct participation is emphasised. Too much! In return for something that has never been done before"* (Interviewee 16).

> *"This person [the current Mayor of Seoul] chose a completely different way of compromising or community participation, so the residents do not know what it is, and he talks about it, but he didn't think about the means of implementing it, so it is very difficult in the field. Public officers have never worked that way before, so they have to learn as they work. Besides, that is a very expensive method. So, increasing contact with the residents means that they have to hear as much from the residents and spend as much time"* (Interviewee 17).

An expert also told of an episode concerning such problems, emphasising direct participation without preparation (Interviewee 16). At the 2019 field research, the then Mayor of Seoul (a new mayor elected in 2021) emphasised citizen participation. The Seoul Metropolitan Government formed a resident participation group to reflect citizens' opinions in establishing long-term urban plans. The expert pointed out that the residents' workshop, which was held for one night and two days, had a minimal number of people who could participate due to time limitations, and there was a problem with citizens' representation. The issue of citizens' representation is also a matter connected to whether various opinions can be presented. As a result, even though it was a workshop for urban planning, the top priority presented through the workshop was 'education issues'. This result clearly shows that one part is overemphasised, and other vital parts may be overlooked.

Twigg (2007) pointed out that in terms of disaster resilience, 'governance' is something that local communities can be involved in through government disaster-related plans or policies, noting the importance of access to information and community participation. Governance is considered to improve adaptive capacity through the learning process of various stakeholders that make up the governance system – the government and the community in disaster resilience (Folke et al., 2002; Bahadur et al., 2010). The process of learning may be made up of continuous experience and reflection in both the community and the government

(Vaneeckhaute et al., 2017). In the case of Korea, there are limitations in two aspects in light of the concept of governance emphasised in the discussion of disaster resilience. The first is that there is little experience of joint agreement from residents due to the absence of local communities. The second is that the newly attempted participation methods are another form of government-led method. Engagement is emphasised in the need for collective involvement in regional issues (Zebrowski and Sage, 2016). It may appear contradictory that another type of top-down method is used in the name of ‘participation’. Besides, this may hinder the process of experience through which the region develops its capacity.

6.3 Individualisation of disaster-related negative impacts

> *"Tenants usually did not ask for help. Because they believed that they had to do it on their own as a matter of course. People are looking for their way to life – every man for himself"* (Interviewee 19).

A flood disaster produces a variety of problems for the person or family who is affected. First, residences and household items are inundated, resulting in financial loss. Secondary damage, such as rebuilding and migration, may occur if the damage is severe. During the Umyeon mountain landslide, some bereaved families who had lost loved ones filed a lawsuit against the state, and they had to deal with difficulties for a long time until the litigation's outcomes were released. Many of the victims interviewed in the Umyeon mountain case had to face the full brunt of the landslide's devastation on their own. The compensation awarded by the state fell far short of the victims' property losses (see section 5.3.2 for more details on the extent of the damage and national compensation). Furthermore, interviews with flood survivors revealed that most people take it for granted that they will be able to overcome calamities on their own (Interviewees 5, 10, 19).

> *"The state should undertake measures to prevent disasters and safeguard its citizens from potential hazards"* (Article 34, Paragraph 6 of the Constitution).

Although the law states that the state has an obligation to keep people safe from catastrophes, it is difficult to consider all disasters to be the state's fault for failing to meet their commitments (Korea Institute of Public Administration, 2013). Korea has a heritage of viewing '치산치수' (forest and water conservation, that is, the prevention of disasters such as droughts and flooding by taking good care of mountains and streams) as a virtue of a monarch. Thus, in comparison with other countries, catastrophe management is naturally recognised as a national obligation (Lee, 2016). This impression leads to the belief that the state should likewise compensate for disasters' consequences (Korea Institute of Public Administration, 2013). Victims of the Umyeon mountain landslide also attempted to collect compensation from the state for their losses, and many media outlets addressed the issue that 'the amount of subsidies paid by the state falls well short of the extent of harm' (Cho, 2011; Lee, 2011). However, because state activities are funded by taxes levied on citizens, paying the state for all civil damages may create a new issue. It is possible, however, for a person who has suffered harm because of an error or omission by an official of the state, to claim compensation from the state. There is a dilemma, though, because individuals must demonstrate that the government made mistakes (Shin, 2021).

If this is the case, is it desirable for individuals to endure the full brunt of a disaster's risk effects? A disaster can occasionally result in a condition that is drastically different from the

pre-event state. In resilience literature, this is frequently referred to as a system breakdown. The purpose of building resilience is not to get into this position (Walker et al., 2004). The fact that the costs of a disaster are spread individually, on the other hand, is likely to result in a lower level of resilience in society as a whole. When a person suffers damage as a result of a difficult-to-manage tragedy and is obliged to accept his or her due share, the person is perilously close to the 'collapse' of life. If a 'disaster risk group' that can be in unparalleled danger continues to exist, a society cannot be termed disaster-ready. Flooding in an uneven way may also make some people more vulnerable to disasters. People who live underground, for example, may be more vulnerable to floods, but until there is a way to restrict them from living there, there may be a 'flood vulnerable class who have increased difficulties'.

Thinking of disasters as 'someone else's problem' may have an impact on the social consensus concerns required in disaster management. In other words, when a crisis situation is not regarded as a 'problem that could happen to someone else', it can impede the implementation of critical actions. Making sure that individuals do not bear all the consequences of risk means that a mechanism is needed to help with common resources. Shelters might be given locally, or financial resources might be employed to compensate for economic losses. As noted in the preceding section, when the area where the landslide happened was classified as a special disaster area, residents clashed. While being designated as such means that the inhabitants receive additional administrative and financial support from the state (Kim and Yoon, 2013), some people were vehemently opposed, fearing that their community would be stigmatised as a 'disaster-prone place'. This example demonstrates how difficult it has become to achieve consensus through conflict. There are two conflict patterns: one between people who require assistance and those who do not, and the other between the government, which must impose regulation, and citizens who do not want to be regulated. Even when dealing with numerous conflict relationship issues that may arise in crisis situations, these will be difficult to resolve when the conflict problem becomes a single individual's problem.

What caused the situation that people were regarded as having to deal with the aftermath of a disaster on their own? The thought that 'the people who suffered the disaster should shoulder the consequences' reflects the idea of dividing it into 'mine' or 'others''. What makes it difficult for people to get involved in other people's affairs? In dealing with this issue, I paid close attention to how the church community dealt with the flood damage, as well as an interviewer's response. As stated in Chapter 5, the church community dealt with tragedies in a somewhat different way. Many church members volunteered to help with repair efforts until the church was restored to its original state. First and foremost, there was a distinction in that the problem itself was a common one. The issue of flooded church structures was not a problem for individual church members. The collapse of roads and walls in residential complexes is also

not the responsibility of any single person. Common resources were naturally utilised in coping with these issues. The church solved the problem by gathering human resources, while inhabitants of housing complexes collected money together. There is no purpose or motivation to 'engage with the problem' if a particular flooding incident becomes the problem of any one individual or household.

Another response I noticed was:

> *"I believe I can assist my club members in any manner when they are having difficulty"* (Interviewee 16).

According to the respondent, he would be unable to assist his neighbours in times of need, but he would be able to assist those close to him in times of need. A similar issue can be found in the response of the volunteer centre staff.

> *"There are so many inquiries [to our centre] asking to volunteer. For example, if there is a forest fire, some people will ask if more volunteers are required at the scene, while others will wish to assist the victims"* (Interviewee 1a).

I believe we may think about how the 'motivational act' of assisting others in need occurs in our minds. It is not that people lack drive to help others; rather, they want some sort of justification in order for their motivation to be translated into action. Even though prior network experience may lead to helpful behaviours in crisis situations (Aldrich, 2012), social ties amongst persons who live in apartment complexes have been found to be quite weak. According to the findings of this study, neighbours and residents in the area scarcely recognise the place where they reside as a community.

Because they have no communal feeling other than the fact that they live somewhere, there may be a lack of any networking tie between them. There is no connection between them, and no difficulties may arise. When an issue does arise, the community may appear for a short period of time. Local communities temporarily manifested in the two villages, such as the Joint Countermeasures Committee, which was established in the process of overcoming the Umyeon mountain landslide. An 'emergency committee for tenant damage' (Kim, 2011) was formed in Jeonwon Maeul, while an 'emergency committee' (Lee, 2011) was comprised of impacted households was formed in Raemian. However, these committee meetings, which had restricted relationships and short-term exchanges, did not persist for long and did not fulfil their purpose of collectively seeking restitution from the state.

Churches and clubs, on the other hand, require people's 'motivation to belong' to the community, whereas local communities do not require this. In such communities that are formed as a result of individuals' willingness to participate, intentional activities might take place. The constant engagement and activities in church communities result in the

development of relationships between members, such as the development of community consciousness or the accumulation of social capital as a result of these interactions (Manyena, 2008).

6.4 Unconnected learning

Accumulated information about disasters and how to deal with them are crucial in disaster management. According to Goodman et al. (1998), accumulated information, which includes how communities have dealt with changes in the past and what actions have been taken, can contribute community knowledge for future strategies. Disaster information includes information about the objective facts of a disaster and empirical information. The former is data that describes natural phenomena, such as climatic information and data on extreme natural events and its human and physical effects. Various statistical data that has been indexed or graphed periodically helps users to understand and judge phenomena objectively. Moreover, the latter is information about factors that increase or reduce the impact of a disaster. This data is also obtained from meaningful results derived from related studies or disaster recovery cases of various actors. However, in Korea, there is not much consensus on the need for empirical data construction on the process of overcoming and recovering from disasters, compared with its importance. Although some of the studies on disaster trauma in individuals or communities have addressed this issue (e.g. Oh, 2016; Kim et al., 2020), it is difficult to find examples of empirical data being applied for effective management of disasters.

The efficient functioning of data is just as crucial as the collection and management of meaningful and valuable disaster data. One of the respondents (Interviewee 16) told me about his experience living in Japan, and how when he went to the government office to report his resident registration, he received a map with information on numerous natural disasters that had occurred near his location. The map showed the areas affected by flood disasters and those where earthquakes occurred as coloured. The places where repeated disasters occurred were marked in darker shades, making it easier to recognise the size of the danger at a glance. Although the information did not lead him to active action to prepare for a disaster, he said that it helped him to be alert to the danger that ‘Natural disasters could happen’. People’s awareness of risk may have a significant impact on preliminary behaviour and supportive attitudes toward disaster management (Cutter and Emrich, 2006; Smit and Wandel, 2006; Patterson et al., 2010), which increase precautionary disaster resilience.

Given the positive correlation between risk awareness and disaster resilience, it should be considered whether the denial of labelling an area as one at risk, as observed in the case study area, affects risk awareness within the region. It was observed that the unwillingness to be perceived as a disaster-prone area appeared to be ‘blocking the delivery of disaster information’ and ‘misinforming’. The investigator was visiting residents and shops in the area to ask for an interview. The investigator’s first question was:

> *“May I ask you a few questions? Is this the area that was damaged during the 2011 Umyeon mountain landslide?”*

A woman, who was a resident of Jeonwon Maeul, answered:

> *"Why are you asking that?" [After hearing the explanation of the investigation] "No, this area isn't that place. The affected area was Hyungchon Maeul".*

Although the information she provided was not wrong, in that the Hyungchon Maeul was an affected area in 2011, she gave misinformation about the place where she lived. Furthermore, there were three real estate agents in the commercial building located inside the Raemian Arthill apartment complex, where the investigator had visited two of those three without guests. A woman from a real estate agent who was asked the same first question answered that the apartment complex was not the area where the disaster occurred, while another man answered:

> *"I didn't work here at the time, so I have no idea".*

It is difficult to understand that he would not be aware of the information about the area, given that he is a person who works to facilitate real estate transactions by providing such information. He probably answered in this way because of an evasive attitude of not wanting to give 'negative information'. It was noted that people intentionally provided non-true information about the area where they are living or working to others who are not related to the area. None of them wanted the area to be labelled as one where disasters occurred in the past or are likely to occur in the future.

The reluctance to be 'recognised as a disaster-prone area' in the region was also seen in the process of the central government's designation of Seocho-Gu as a special disaster area. Seocho-Gu, which had predicted huge budget requirements for restoration of damage, suggested the central government designate the zone as a special disaster area. This is because, if it is designated as such, the central government can provide from 50 per cent to up to 80 per cent of the cost of restoration (Kim and Yoon, 2013). However, some local residents were opposed to the designation. According to articles on this (Hwang, 2011; Jeon et al., 2011), the reason why residents did so was because, if so designated, the area would be recognised as one prone to flooding, which would lower the house prices (the real estate value). In the article by Jeon et al. (2011), it was noted that a real estate brokerage website had added the description of 'an apartment not related to the landslide on Umyeon mountain' to the sale information. Housing and real estate assets account for about 75 per cent of households' assets (Statistics Korea, 2018), which is quite high, forcing residents to be sensitive to fluctuations in property prices. A study on whether the landslide on Umyeon mountain affected fluctuations in housing prices found that the average sale price of apartments within 500 metres of Umyeon mountain has been about 15 per cent lower than that of the control group since the 2011 incident (Jung and Yoon, 2017).

Risk perception

The same questions were asked in an interview survey to find out the relevance of flood experience and risk perception: 'Do you think your neighbourhood is safe from flood risk?' and 'Which entity do you believe has the most essential role in flood disaster mitigation?' Table 6-1 below shows how participants responded to the two questions, whether they had been affected by a disaster, and information about their affiliation.

It is worth noting that inhabitants of Seocho-Gu are upbeat about the likelihood of future flood disasters occurring in their area. It can be seen from the responses that there is no clear relationship between disaster experience and risk perception. There are empirical studies that show that people overestimate the risk immediately after a flood disaster, but over a period of time they can underestimate the risk of flooding (Penning-Rowsell, 2003; Baan and Klijn, 2010). On the other hand, the conclusion that experience of disaster and risk perception do not have a relationship cannot be drawn. Respondents who had personal experience of or observed disasters had a strong belief in the likelihood of them occurring in the future. However, this implies that experience of catastrophe and risk perception do not always result in a straightforward causal relationship, and that other complicated factors may have an impact on it. The area has not had any further flood catastrophes since the 2011 tragedy, and individuals who believe their properties are physically well-maintained in preparation for floods anticipate a less significant risk of flooding. This table shows that persons who were aware of climate change and the increase in anomalous weather occurrences were also aware of the recurrence of flood disasters.

Table 6-1 Respondents' individual experiences with the disaster and their understanding of the potential for danger

Respondent	The frequency of flood disaster		Flood disaster experience	Affiliation classification (Work for disaster management or Residents of Seocho-Gu)
	Expected to	Reasons		
1a	Increase	Climate change and unusual weather	Provided help	Disaster-related worker
1b	Increase	Climate change	Provided help	Disaster-related worker
2	Increase	Climate change	None	Professor, Resident
5	Decrease	Physically well maintained	Indirect experienced	Resident
6	Decrease	Well prepared	Witnessed	Not resident
9	Increase	Frequently witnessed floods	Witnessed	Not resident
10	Increase	Climate change	Experienced	Workplace
11	No idea	Well-prepared for floods, and will suffer less damage	Experienced	Resident, Workplace
12	Decrease	Physically well maintained	Indirect experienced	Resident
13	Decrease	Physically well maintained	None	Workplace
16	Increase	Unusual weather	Indirect experienced	Workplace
17	Increase	Unusual weather and increasing man-made disaster factors	Indirect experienced	Workplace

18a	Stay the same	But the number of areas affected by floods will be reduced	Provided help	Disaster-related worker
19a	Decrease	Well restored physically	Indirect experience	Resident
20	Increase	Unusual weather	None	Not resident
21	Increase	Climate change	Witnessed	Not resident

6.5 Conclusions

The previous chapter dealt with ‘community’, the subject of the idea that ‘community has disaster resilience’. This chapter is about the meaning of ‘community has disaster resilience’ in practice. In other words, I investigated the areas that experienced significant disasters in various ways and dealt with the factors that made the climate phenomenon a major social disaster. I discussed what was missing or what would be needed, focusing on ‘community’.

That some areas have experienced, or are likely to experience, disasters means that the residents of some areas have faced or will face difficulties together. Various empirical studies have presented various measures to reduce difficulties when people jointly suffer from crises through case studies. However, this chapter deals with situations that make it hard for difficulties to become common problems in the absence of a specific community to play a role during a disaster. In modern large cities in Korea, the notion of a local community was unfamiliar to people and they lacked experience as a local community. Such lack of experience was the same not only for local residents but also for the public sector. The local community was not used to engaging in public affairs, and the public was unaccustomed to involving the local community in its own domain. Social learning is necessary for the experience of a disaster to prevent another disaster. Without the subject of learning, this learning process may also become unsustainable. Suffering disasters may cause issues concerning disasters to be avoided in discussion if it is considered that it was just something that an individual experienced due to bad luck.

A significant disaster, such as the Umyeon mountain landslide, may give lessons to society in some way. Ironically, the more influential the impact of the disaster, the more explosive the public debate on the problem becomes. For this reason, a major disaster can be an opportunity to identify various problems and a chance for change at the same time. For many residents, it is clear that the Umyeon mountain landslide was a massive disaster; however, it is just considered an event in the past that will never happen again.

As mentioned earlier, ‘community’ is considered as the default terminology in disaster resilience debates. One of reasons is that some kind of organisation is needed as a regional agent who can play the role of governance and identify and solve local problems as common ones. However, using the term ‘community’ to encompass all the different local organisations, such as neighbourhoods, villages and local government organisations, can further confuse various issues in disaster resilience discussions. ‘Community’ may not always be a suitable term for use with disaster resilience.

Chapter 7. Conclusions

Disaster risk is not evenly distributed, meaning that people who live in certain places are likely to suffer losses and damages. Disasters are caused by natural occurrences such as harsh climates, but more complex human decisions increase the risk. It is well acknowledged that disaster risk management approaches based on current infrastructure and technical solutions are limited when dealing with today's major disasters (Lorenz, 2013; Aldrich and Meyer, 2015). Disaster resilience is a relatively new concept that has been raised with a view to finding alternatives rather than criticising the current management method. Holling (1976) coined the term 'resilience' to describe the ecosystem's long-term sustainability, and it has subsequently been borrowed by various fields such as engineering, psychology and business. Although the word itself is critiqued for its lack of precise definitions and explanations because it is employed as a metaphor, it has also become the objective of crisis management in terms of coping with the system's complexities and uncertainties (Ntontis et al., 2018). Despite widespread interest in the concept, determining what it means to build disaster resilience and how resilience is built remains a challenge.

The community is referred to as the main subject of disaster resilience. However, 'the community' is also a contested concept every bit as much as resilience. The nature of 'the community' is also changing along with a wide range of social changes. The focus of this thesis is to discover why the term 'community' is used as the default terminology in the context of disaster resilience. Residential areas were selected as case studies, and the feasibility of communities as subjects of disaster resilience in those locations was explored, as well as the potential and restrictions of such communities to build resilience.

Disaster is a disturbance to the human system in disaster resilience, and this study focuses on a flood. The selected case event is the 2011 Umyeon mountain landslide, which caused significant damage in Seocho-Gu, Seoul. It is examined in a variety of ways in this study, using secondary data analysis and interview methods.

7.1 Main findings

Although they may not be generalisable to specific cases, several findings in this study – with caution – might be applicable in other Korean urban regions. Furthermore, the final suggestion of this study, that is, the factors considered significant in community disaster resilience, may vary greatly depending on what community is, which should be addressed in the disaster resilience discussion.

Prior to identifying key questions, Chapter 4 addressed floods as an external risk to the human system. Resilience is the ability to face sudden and intense external disturbances that can disrupt the system's homeostasis, so different explanations are needed depending on the external influences. Torrential rain is the main cause of flooding in Korea. Various data indicate that flood disasters in Seoul occur every year and that damage is not diminishing, and it can be seen that disaster risk is not decreasing despite ongoing disaster management. Unlike fluvial flooding, pluvial flooding may not be considered a common disaster since it does not bring recurring destruction to a certain area due to the nature of localised heavy rain. Many of the respondents interviewed, even those who had experienced the disaster, thought the likelihood of a flood disaster was low. Because flooding has such abrupt characteristics, quick and appropriate decision-making on the site might influence the magnitude of the risk. In this regard, the community is frequently emphasised as an effective agent of emergency response in flood disasters (Ntontis et al., 2018). Furthermore, it has been found that flood damage can be exacerbated when combined with other causes. Flood damage might also disproportionately affect certain people or locations. Therefore, as emphasised in the disaster resilience discussion, the diverse characteristics of these flood disasters imply that flooding should be considered in conjunction with numerous external factors that have complicated effects.

What has been noted in this study is the possibility of a place or local community in Korea being able to demonstrate its capacity to become resilient in disasters. To address this question, it was necessary to identify a place-based community. This study selected two places as a form of residence as cases: Raemian Arthill apartment complex and Jeonwon Maeul. Both locations were affected by the same disaster in 2011; however, they were compared due to the different types of dwellings. There was an anticipation that capturing the 'local community' would be easier than other places because the boundaries of the 'neighbourhood' were clearly formed due to homogeneity. However, in both cases, residents did not particularly recognise their dwelling as a local community. Aside from living in geographically adjacent locations, there were not enough 'shared factors' to be recognised as such. Social changes that allowed the radius of life to expand beyond spatial restrictions may have had a significant impact, but this study focused on the constraints imposed by the residential area itself.

Apartments, the most popular type of housing in Korea's major cities, have distinct spatial boundaries because they are developed in the form of complexes. Apartment complexes have communal resources that residents can use, such as joint operating funds and joint facilities, which have shown to be quite useful in the disaster recovery process. Disaster insurance, as in the case study, might be subscribed to as part of the management fee, and disaster recovery costs could also be covered with cooperatively pooled financial resources. In apartment complexes, however, the pathways to each household's door and parking lot are usually the main route for inhabitants, which not only decreases the number of contacts with neighbours, but also often makes them unaware of one another. Furthermore, many households from various backgrounds gather in a site called a complex through the process of sale of lots and moving in, resulting in a lack of historical context of location. As a result, residents' relationships are weakening as society becomes more personalised and fragmented, and apartment complexes exacerbate this trend. Women's associations that exist in other areas no longer exist in Raemian, and the senior citizen centre is only used by three persons.

On the other hand, in Jeonwon Maeul, a detached housing complex, the bonds between residents were relatively stronger than those of people in apartments. The majority of the people in this village were elderly, and they had lived there for a long time. Furthermore, the village hall, which was placed at the settlement's entrance, served as a kind of a reception room where various individuals gathered. It is crucial to note, however, that the villagers did not assist one another in the event of a disaster in 2011. People believed that those who experienced the disaster had to overcome it on their own. Furthermore, in the case of this disaster, the damage was extremely discriminatory. It mostly affected tenants who lived underground or in a semi-basement, who were relatively vulnerable in terms of socio-economic status. They often lived there for a short period of time, so the network relationship with the villagers (homeowners) was relatively weak.

This study looked into the prospect of local government working closely with local population to overcome disasters as a community unit. It is quite interesting that a local government is often referred to as a local community in the resilience literature (Schelfaut et al., 2011; Kang, 2014), and it has been confirmed that some people recognise it as such. In terms of efficient use of community resources, it is also argued that local government might be regarded a community unit (Park and Kim, 2014). The government played a significant role and was instrumental in disaster management. However, the district of Seocho-Gu has autonomy, but its resource utilisation method is quite limited, and much of what it accomplishes is dependent on the next level of administration, the Seoul Metropolitan Government. In terms of governance, the government communicates with other sectors through limited channels. Citizens, as policy receivers, seem to be accustomed to the government's fairly formal and leading method of communication. The autonomous government may implement some of the

measures required by the community through the implementation of plans or policies. However, a local government within that category may not be appropriate as a 'local community', when looking at a local community as a resilient entity that recognises and solves local problems actively.

This study begins by asking why a community attracts attention as a significant agent in disaster resilience. Theoretically, there are three main reasons. First, as a contrasting concept to an individual, the community is mentioned as a collective unit. It is considered that groups, rather than individuals, can develop synergy in overcoming adversity as a subject preparing for a high-risk external influence such as a disaster (Gil-Rivas and Kilmer, 2016). Disaster resilience is interested in the driving force and process of individuals working with one another to overcome adversity together. The social capital created from the bonds of community members is regarded as a key aspect in overcoming the crisis (Aldrich and Meyer, 2015). The second is the local community as an object of government policy or strategy. In this regard, the terms 'local government' and 'local community' are frequently used interchangeably without distinction (e.g. Cabinet, 2019). When a community is mentioned as an object of government policy, there is a criticism that the government uses the word 'community' with positive nuances to gain appeal rather than addressing the practicality or applicability of the resilience in depth (Mulligan et al., 2016). The last reason is when local communities are also discussed in terms of governance, which emphasises multidimensional participation as the subject of appropriate empowerment (Chaskin, 2008; Berkes and Ross, 2013). The local community is expected to have the ability to recognise and solve the problems of the community as an active and direct actor.

The main topics covered in this research are issues related to developing a community-based approach to disaster resilience. In the end, the reason communities are emphasised in disaster resilience is related to why a community is needed in areas where disasters can occur.

To summarise, a community is needed as a form of social organisation that can play a role in governance and identify and solve regional problems as common problems. However, the use of the term 'community' in all of the various regional groups adds to the confusion about what disaster community resilience is. Importantly, a community that is not clearly identified can cloud many issues in the discussion of disaster resilience. In this study, it is observed in many aspects that, theoretically, the expectation of 'something would be desirable or necessary to have a resilience' may not apply to the case study in Korea, the metropolitan areas of Seoul. The points found in the case study areas suggest that disaster resilience may be discussed very differently depending on what communities (with estimated resources and capabilities) are. All communities with these three characteristics can be called local communities, and discussions often progress without elaborating on which of the three types

they refer to. The community may not be a suitable term for use in conjunction with resilience terms.

Considering that other countries already use this concept as a major agenda for disaster management, the use of it in Korea is a little behind the times. The Korean government is also trying to utilise some of these concepts, but many people, including public officials, are still unfamiliar with them. Not only does the term ‘resilience’, a metaphorical expression, have ambiguity, but the lack of words in Korean that are a proper translation of it seems to be one reason for lessening the utilisation of the term. If there has not been much discussion yet, this may be an opportunity to take the first step well. This study suggests that defining more clearly what the community is as a subject of disaster resilience needs to take precedence over discussions on the specifics of what is necessary to demonstrate the resilience of the community.

The concept of resilience is criticised as much as it has gained popularity. At the heart of the criticism is the ambiguity of the concept. The explicit establishment of the concept is a process that must precede its use, yet this concept may be viewed as receiving significant attention in the lack of such a process. Some scholars are concerned that resilience is viewed as a ‘one-size-fits-all’ concept (Coetzee et al., 2018). People may be said to live an unstable life because they do not know what will happen in the future, and they want to reduce the instability that comes from not knowing as much as possible. Since disasters are hazardous events that can cause considerable instability, people want to manage them well to lower their risk. The concept of resilience is often said to be insufficient to have practicality. It is not certain what resilience is; the expression ‘being resilient’ may seem to be desirable. Since the term ‘resilience’ is a word with this ideal meaning, it seems that it has developed a tendency to be used as a slogan for drawing attention somewhat indiscriminately in many fields. Given that resilience is aimed at making the best decisions, taking into account the premise of complexity and instability (Gao, 2018), this concept is meaningful in acknowledging and highlighting the limitation of not fully controlling the entire complex system even with good decision-making. In this regard, I believe it would be appropriate to consider resilience as a vision or strategy for disaster management. However, I do not think that this approach should be considered a ‘one-size-fits-all’; resilience should be researched with caution in a variety of circumstances. It is critical to emphasise in the resilience debate that various problems should be addressed with the context related to the problem, and that the context is not considered singularly.

7.2 Reflections

When the time came to conclude the study, I noticed that there had been quite a few changes since I designed the research.

My first research question was, ‘What did the local community do as it went through extreme flooding?’ Focusing on the question, I thought that I could find such factors so that I might identify the variables that should be addressed in the local community by investigating the issues raised in the process from multiple perspectives. The question implicitly contained the assumption that a local community existed. However, during the field investigation, I found that this assumption needed to be corrected immediately. Most of the people I met in the field research told me in detail about the experiences of the flood. However, the elements pertaining to the ‘local community’ were absent in their story. I thought the question, ‘What do you think the local community is?’ was more fundamentally necessary. However, respondents’ unexpected responses, such as ‘local communities?’, were very embarrassing. There were several studies that set out local government units as community units, and it confused me a lot that even local governments were not recognised as communities by people.

In the discussion of disaster resilience, ‘community’ is mentioned as the main subject. However, if there were no local communities, I was at a loss how to carry on with the research. My supervisor read my writing and commented,

> *“It feels like you have a definition of community for yourself that you are using and not telling us about”.*

As soon as I read this comment, I realised something. There was a ‘community’ image in my perception. About 30 years ago, a community referred to as a ‘traditional community’ in recent literature existed in large cities such as Seoul. Just as the puzzle that had not been solved was put together, the idea that ‘there may be no such [traditional] local community’ changed the perspective of the study.

I read various items from the literature on community disaster resilience again and tried to find a ‘reason’ for what purpose the community is referred to as a key subject. The absence of traditional local communities does not mean that the population of an area might not have disaster resilience. Rather, the absence of a suitably placed community in the region could mean that the ‘community role’ expected in disaster resilience did not perform well. Then, I analysed the collected data, with these two key phrases at the centre of the analysis: ‘local community as the subject of disaster resilience’ and ‘overcoming disaster’.

The second keyword of my study is ‘resilience’, a tricky concept. The two concepts of ‘community’ and ‘resilience’ have something in common: they are ‘contested’. I wrote in the introduction initially that ‘this concept of resilience could be useful’. Without asking myself a

more fundamental question about resilience, I think I was looking for what would be important in resilience. To be honest, I experienced lethargy during my research for some considerable time. There may have been various causes, but one of them was due to the thought that I did not know how to proceed with the research. The more I approached the concept of 'resilience', the more ambiguous it became to me. I think this was after I thought that I should not try to define the concept of resilience in a single way.

It seems to be a very innovative and new concept, yet in some ways, the things mentioned in the discussion of resilience do not seem new. Still, I think it is desirable for this concept to be actively discussed in the field of disaster. It has changed the starting point of the discussion a little bit in the way it deals with the complex and destructive difficulty of 'disaster'. I think the important point in the discussion of resilience is the recognition of 'complexity'. It is significant in that related concepts such as complexity-related interactions, nonlinearity, unpredictability and dynamics are discussed together in disaster issues. Another is related to the fact that the community is regarded as a major subject in disaster resilience. I think the term 'community' is being used to express the 'place-based' and 'bottom-up' approaches, which will be necessary in the disaster field. In other words, it seems to indicate the localised forms of social organisation that can deal with regional problems as a community. However, I think the question should be asked whether it is desirable to name a local social organisation as a 'community'. There seems to be an aspect that adds ambiguity by using community terms used in various semantic ways adding alongside resilience terms. To understand the idea of community resilience, I believe a more contextual approach is required rather than an attempt to generalise. This is due to the fact that the subject of resilience (the entity who has resilience) has a complicated relationship with the object of resilience (resilience to what as an external factor).

My last reflection is about my whole PhD process. I would like to put it simply as 'related to the reference'. I am incredibly grateful to my supervisors for teaching me that I should be able to write a 'reference' well. This meant I was realising that I had to ask about everything in my research, and some of my ideas might have been oriented from someone else's perspective. The most important achievement in this long PhD, I believe, is that I learned that there are no obvious ideas. Researchers should be 'confident' about their research; however, I think that it is obtained from a series of processes rather than research results (of course, the results are important). I think the PhD process is a path-making process. It seems to be the process of creating a path connecting an existing route. I learned that any kind of path, or one going in any other direction, can only be valuable if it is connected to other existing things.

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Appendix 1. Interview prompts

- Common questions for all respondents

1) What do you think what a local community is?
2) Do you know what resilience means?
3) How do you think natural disasters will change in the future? It's likely to be similar to the present / it gets worse / it won't get worse
4) Whose role do you think is most important in disaster management?

- Questions by respondents

Type of respondents	Questions
Experts (researchers, professionals)	✓ Why do you think local communities are not well recognised by people? ✓ What do you think is important to reduce the impact of a flood disaster? ✓ What is important to increase the community's disaster resilience?
Public officials	✓ What is your role in your department? ✓ In the event of disaster, is there the code of conduct for public officials? ✓ How about cooperation between other departments or with other organisations? ✓ What does your organisation usually do for disaster management? ✓ How do you provide information? ✓ If the head of borough/the mayor (Gu or Si) change, does it have any impact? ✓ How does your government usually reflect the opinions of residents? ✓ Do you think the role of residents or communities in disaster management is necessary? So, what do you think it is?
Residents	✓ Whether you have experienced a flood disaster If you have had a flood disaster The process of overcoming, the encountered difficulties What was needed at the time of the flood disaster How to get the information you need If you have had a flood disaster indirectly – experience, feelings, and thoughts ✓ Where do you think you will be the first to ask for help in a disaster situation? ✓ How satisfied is the government with disaster management? ✓ (Depending on their consent) Basic personal data Name, age How long have you lived here? How is your relationship with your neighbour?

Appendix 2. List of interviewees

Respondent code	Name (marked anonymously)	Affiliation	Age	Gender	Length of residence	Length of employment	Residential area	How to record
Interviewee 1a	Kim, OO	Seoul Volunteer Center	40s	M				Recorded
Interviewee 1b	Yoon, OO	Seoul Volunteer Center	20s	S				
Interviewee 2	Byun, OO	Professor, urban planning	50s	M	7 years	12 years		Noted
Interviewee 3	Jang, OO	Seocho City Office	40s	M		About 1 years		Noted telephone conversation
Interviewee 4	Lee, OO	Seocho City Office	30s	M		For a few months		Noted telephone conversation
Interviewee 5	Kim (anonymous request)	Housewife	70s	F	40 years		Daechi, Seocho-Gu	Recorded
Interviewee 6	Park (anonymous request)	Taxi driver	60s	M	37 years		Gwanak-Gu	Recorded
Interviewee 7	Du, OO	Seoul Community Support Center	30s	F		2 years		Noted telephone conversation
Interviewee 8	Ji, OO	Seocho City Office	40s	F				Noted telephone conversation
Interviewee 9	(two women, anonymous)	Juyeon real estate agent	60s	F	More than 30 years			Noted
Interviewee 10	Park, OO	Dukyun Industry	60s	M	33 years	16 years	Seocho-Gu	Recorded
Interviewee 11	Cho, OO	Yesim Church	80s	M	40 years	20 years	Seoho-Gu	Recorded
Interviewee 12	Son, OO	Housewife	60s	F	15 years		Seocho-Gu	Noted telephone conversation
Interviewee 13	Kim (anonymous)	Banpo Raemian Security	50s	M	30 years	2 years	Yeongdeungpo-Gu	Recorded
Interviewee 14		Arthill real estate agent		M				Noted
Interviewee 15		Daehan real estate agent		F				Noted
Interviewee 16	Yang, OO	Seoul Institute	50s	M		26 years	Sanbon, Kyeonggi	Recorded
Interviewee 17	Jang, OO	Seoul Institute	50s	M	30 years	25 years	Yeongdeungpo-Gu	Recorded
Interviewee 18a	Cho, OO	Seoul Government	40s	M				Recorded & noted
Interviewee 18b	Ahn, OO		50s	M				
Interviewee 19a	Lee, OO	Residence in Jeonwonmaeul	70s	M	15 years		Seoho-Gu	Recorded
Interviewee 19b, 19c, 19d	(three men, anonymous)		70s	M	More than 10 years		Seocho-Gu	
Interviewee 20	Moon, OO	Taxi driver	60s	M	30 years		Dobong-Gu	Noted
Interviewee 21	Ki, OO	Taxi driver	60s	M				Recorded