COST ACTION TU 1201
Urban Allotment Gardens in European Cities

POST-EARTHQUAKE COMMUNITY GARDENS IN CHRISTCHURCH NEW ZEALAND

Short Scientific Report on the Short Term Scientific Mission

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Figure 1. 'The Seeds of Resilience', 2015. Photo: author.

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Abstract

Historically allotment gardens and community gardens occupied a special position in the wake of crisis and depression (Barthel et al. 2013). The benefits of gardening range from self-sufficient food production to enhancement of interpersonal relationships and social cohesion. While these social, psychological and ecological benefits are well proven, there is still little empirical research in the context of a major natural disaster. The resilience concept offers various possibilities of analyzing the resistance of individuals or communities against external stress factors, but it also has to be put to an empirical test. Two devastating earthquakes struck the city of Christchurch, on the Southern Island of New Zealand, in 2010 and 2011, which resulted in massive damage and displacement of inhabitants. While the *Canterbury Earthquake Recovery Authority* focused on rebuilding urban infrastructure, the civilian population expressed their needs for recreation of urban atmosphere, new purpose of life and sense of community. These desires had a strong impact on the local community garden scene and existing community gardens and furthermore led to the creation of new post-earthquake garden projects. Eleven interviews were conducted and an experimental instant photo mapping technique was applied in order to collect empirical data on the motivation of the stakeholders and the individual attachment to community gardens. This paper will reflect the course of the *Short Term Scientific Mission* and discuss the immediate findings and results.

Keywords: Natural disaster, earthquake, community gardens, social cohesion, resilience, recovery, New Zealand

1. Introduction

The aim of this *Short Scientific Report* is to describe the course of the *Short Term Scientific Mission (STSM)* in Christchurch, New Zealand, during September 2015 *(1.9-30.9.2015)*. The purpose of the mission was to investigate the benefits of community gardens in a post-disaster situation based on existing research and theoretical frameworks from different scientific disciplines.

This report describes the unique context of post-earthquake community gardens in Christchurch, which is characterized by the European garden heritage of the city, geographic features and post-earthquake recovery and rebuilding processes. The argumentation will lead from preparation and purpose of the *STSM* over general background information to the summary of existing research results. Afterwards the working plan and the theoretical & methodological framework are presented and the selected research methods are briefly reflected.
Subsequently ten visited garden projects are characterized and the immediate results of the stay in New Zealand are presented. Finally, constraints and recommendations for future research are brought up and discussed.

During the *STSM* in Christchurch, a wide range of empirical data was collected with the purpose to author scientific journal papers. These possible outcomes of the research are mentioned in the last chapter of the report.

Acknowledgement

I would like to thank *COST Action TU1201: Urban Allotment Gardens in European Cities* for funding the research mission and the School of Landscape Architecture at Lincoln University for hosting me during my stay.
Special thanks go to Dr. Andreas Wesener for supervising my work and providing valuable contacts and recommendations.

2. Purpose and preparation of the research mission

The main objective of the research mission is to investigate social, physical-material and symbolic-representative qualities of community gardens in a post-disaster situation. As the case studies in Christchurch are unique in many ways, it is important to explain the broader context. For this reason, the preparation of the research mission included an extensive literature review on the topic of "Gardening in Times of Crisis". The essence will be discussed in the next chapter. Furthermore, information was collected on the historic development and the geographical characteristics of Christchurch. Many community gardens in the Canterbury area are organized in the *Canterbury Community Garden Association* (*CCGA*). This umbrella institution was contacted several months before the arrival in New Zealand and first interviews were arranged. After the major earthquakes in 2010 and 2011, the city was subject of intensive research efforts on various topics including social capital, resilience, community gardens and temporary urbanism (e.g. Hosted, 2013; Wesener, 2015). These existing research strategies were taken into account and carefully analyzed with due regard to applied methods and final results. Additionally further literature reviews brought up general disaster research approaches (Aldrich, 2012). These preliminary studies are based on *Social Capital Theory (SCT)*, which aims at describing bonds between human individuals (Putnam, 1995b).

It became obvious, that the social benefits of community gardens have been investigated into already. However, a research gap was found in the context of social bonds and place-based social interactions. More knowledge is needed on the socio-spatial characteristics of community gardens in post-disaster situations and the connections of individuals and specific places. Thus, another theoretical framework was introduced in this research approach. *Place Attachment Theory (PAT)* offers an inclusive model for understanding these socio-spatial interactions on community and individual level (Mihaylov & Perkins, 2014).

Building on these preliminary considerations, a comprehensive working plan was developed, which includes questions sets for investigating socio-spatial, resilience and governance qualities.

This working plan will be presented and further discussed in chapter five of this report.

The following chapters three and four will outline the background and describe existing research.

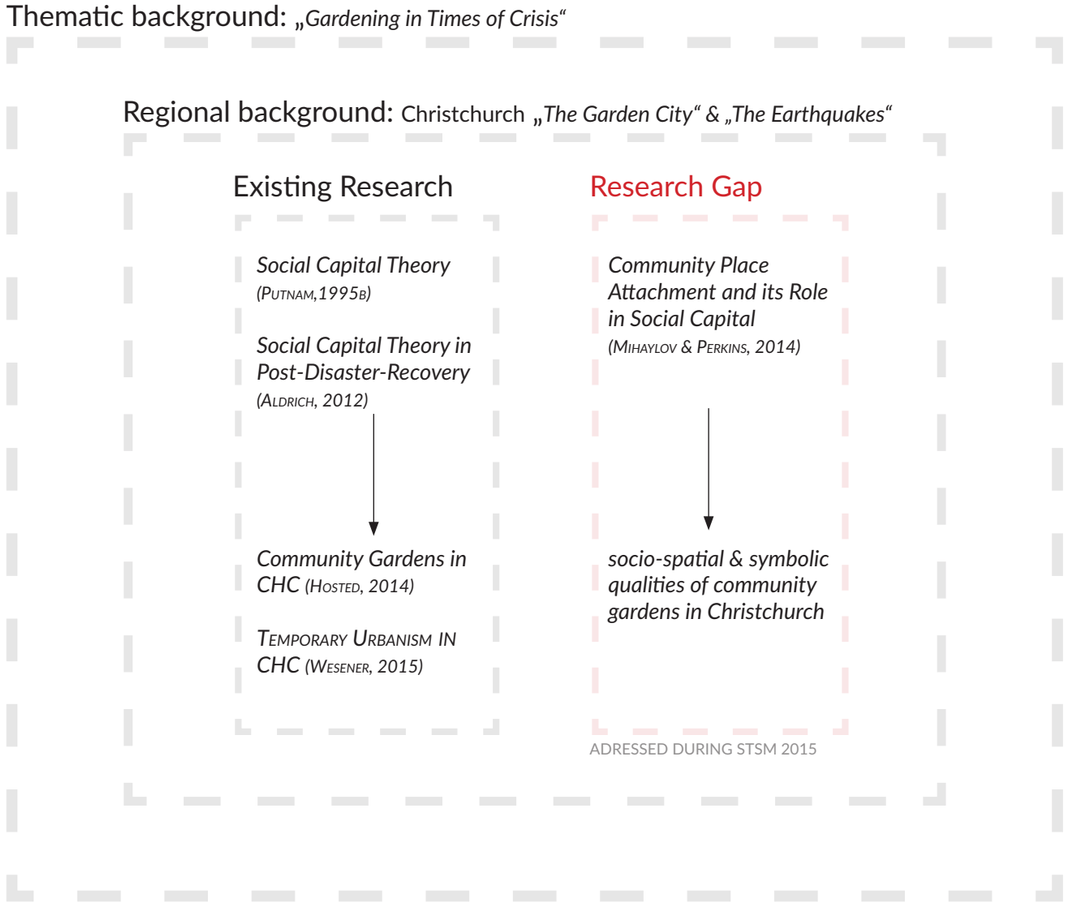


Figure 2. 'Structure of the Research', 2015. Source: author.

3. Gardening in Times of Crisis

The development of urban agriculture and allotment gardens is directly linked to poverty and deplorable socioeconomic states. In European history, this phenomenon became obvious during World War I, World War II and the economic crises in the 1930s; e.g. the number of allotment gardens in Britain increased significantly between 1914 and 1918 as well as between 1939 and 1945 (Barthel et al. 2013). The gardens were renamed *Victory Gardens* during this time, as they became important platforms for providing resources for the population. The first legal basis was already established in 1887 in the United Kingdom, in order to provide parcels to people suffering from the effects of early industrialization (Lawson, 2005).

The German concept of *Armengärten* (allotment gardens for very poor people) even dates back to the 1820s when gardening became part of a politic strategy for economic relief of state welfare and social stabilization. Therefore, individual plots of public land were given to tenants for small amounts of money, in order to encourage people to become self-sufficient (Stein, 2010).

The *Laubenpieperkolonie* (variation of allotment garden) had its origin in the urbanization thrust of Berlin after the German-French-War. The gardens were not only used for food production, but also provided shelter for people suffering from the housing shortage in the late 19th Century. A few years later, the Red Cross initiated the *Arbeitergarten* concept (allotment garden for working class) for caritative purpose in order to fight tuberculosis and to supplement pension (Gassner, 1987).

German social reformer and garden architect Leberecht Migge started to promote and implement garden projects as tool for self-help and self-sufficient lifestyles instead of dependence on welfare from 1913 onwards (Haney, 2010).

The *Kleingarten* ("small garden" - classic style of German alltoment) beame an important element of the industrial city and working-class housing estate, especially in the Ruhr Area, where hard mining jobs and work in factories led to health issues and dissatisfaction amongst the laboring class. Thus industrial magnates offered allotments to their employees in order to compensate for their physical exhausting labor and to ensure an enhanced quality of life (Stein, 2010).

In the United States, the concept of community gardens is also a response to social and economic crises. Lawson (2005) mentions the Great Depression from 1893 to 1897 as important factor for the establishment of the first communal gardening project in Detroit. In this context, individuals with deprived backgrounds were encouraged to grow their own food on urban vacant land. The ideas were later on adapted by several other cities including New York, Chicago and Philadelphia but lost relevance as economy recovered (Lawson, 2005).

Although since then, the idea of growing food in the city emerged again in different contexts throughout the American history, for example as community gardens were discovered as a tool for social cohesion in the South Bronx during the 1970s (Birky, 2009) or large-scale urban farms became essential parts of post-industrial infrastructures in the Rust Belt Cities .

A more contemporary example for urban gardening in times of crisis is Cuba, which faced a sudden post-oil scenario after the decay of the Eastern bloc in 1990. This caused a collapse of the Cuban agriculture as imported chemical fertilizers, herbicides and concentrate became unavailable from one day to another. Although intensive efforts of the government to strengthen the local agricultural sector and the take-over of 10,000 small scale farms, widespread food shortage was the result and even staple foods as rice and beans became scarce (Massmann, 2003). The urban population particularly suffered from the food scarcity and so self-sufficient agriculture became of public interest. Especially Havana immediately developed a unique urban agriculture infrastructure, ranging from small-scale vegetable plots over livestock farming on balconies to private fincas (small farms) with cattle (Hadem-Kälber, 2011).

The most recent example for crisis-ridden gardening is the global economic collapse in 2007/08, which led to an even more severe financial turndown in southern Europe. The results were dramatically rising unemployment rates and public poverty. Also in this context, urban agriculture and collective gardening became an important informal strategy in coping with the crisis and a rich flourishing garden movement was entailed (Camps-Calvet et. al., 2015).

A historic perspective confirms that there are significant connections between gardening and crises.

However, more evidence is needed on how different forms of collective gardening affect individuals and communities and whether the benefits result on sociologic, psychologic or economic levels.

Therefore, current research approaches use the resilience concept to analyze the value of gardening in crisis or disaster contexts (Okvat & Zautra, 2014) or to examine the human-nature interactions during recovery processes (Tidball, 2014).

Figure 3. 'Spread The Hope', 2015. Photo: author

4. Background

Community gardens in New Zealand share many similarities with communal greening projects in Europe or North America. But due to several reasons, including location of the country, colonial heritage and post-colonial development, *'Aotearoa'* (Maori for New Zealand) is a unique breeding ground for community based gardening projects.
This chapter will outline the regional background of the *STSM*. It will present information about the geographic situation of Christchurch and its urban expansion. Furthermore, the effects of the major earthquakes in 2010 and 2011 will be described, as they frame the post-disaster context of the presented research.

4.1 Christchurch "The Garden City"

Christchurch is located on the South Island of New Zealand on the eastern side of the Southern Alps, surrounded by a flat terrain called Canterbury Plains, which is strongly characterized by agricultural land use. With a population of 366,000 (2013) inhabitants, it is the second largest city in New Zealand after Auckland and before Wellington (Statistics New Zealand, 2013). The arrival of the *"First Four Ships"* in 1850 is a characteristic tipping point in the history of Christchurch and the English settlement. The origin and tradition of the settlers strongly influenced and shaped the city with elements like avenues, botanical gardens and central parks.
Due to the oceanic climate and the quality of soil, a rich garden scene developed, based on the traditions of the city's founding fathers. Christchurch prides itself for its rich offer of parks and public gardens and decided to strenghten *„The Garden City"* image to a sense of cultural identity in 2006 in the *Long Term Christchurch Community Plan* (CCC, 2006).
This occured 100 years after the city was first referenced as *„Garden City"* (Morris, 2006).
Although this nickname does not refer to urbanistic models like Ebenezer Howard's vision of an urban rural fusion, it reflects the general affinity for gardens and green spaces.
The strong English roots become evident in the garden design, open space quality and general urban experience and led to the portrayal as the *"most English City outside of England"* (Ibid, p.3).
Even though the imported idealized garden ideas left distinguishing marks on the visual appearance of green spaces in Christchurch, the types of gardens differ from Europe or North America because of the complex climate.
The grid structure of the city with the charcteristic urban subdivisions is closely connected to the vision of the individual house. This form of land use provided sufficient open space for tenants to grow their own vegetables and fruits. For this reason, the system of allotment gardens does not really exist in New Zealand, although it has a long tradition in Britain. However, the concept of communal cultivation of food existed in the Maori culture long before European settlers arrived (Trotman & Spinola, 1994, p.16).
The colonization of New Zealand influenced the traditional agricultural Maori practices, which were more subsistence orientated, as the European settlers introduced farming as a business model.
Furthermore, land use conflicts occurred as the *'pakeha'* (Maori for New Zealanders of European descent) took ownership of fields, which were in traditional use before (Pauling, 2001).
Since the 1930s, the cultivation of food in individual household gardens became of public interest and was further encouraged in the *"Dig for Victory Campaign"* during the Second World War (Dawson, 2010, p.232).
The first community gardens in Christchurch were set up in the 1970s with no clear vison or additional background knowledge, so it took several years until a collective garden movement became apparent.

In the 1990s, the *Organic Garden City Trust* was established as an outcome of the *International Federation of Organic Agricultural Movements* with the objective to create the World's first organic city, which was supposed to be Christchurch.

The general idea of the trust was to promote healthy, sustainable organic living and for this purpose, a community and home garden group was created (www.organics.org.nz).
This organization supported home and community gardening and became later the *CCGA*, which is the state of the art garden network with 29 registered gardens at the present day (CCGA, 2015).
Since 1999 the *Christchurch City Council (CCC)* became interested in Community Gardens as a tool for urban sustainability and social inclusion and started to support individual garden projects. This support ranges from funding to provision of resources like land, water or expertise.

Additionally a community garden policy exists which gives detailed information about the relationship between the *CCC* and the *CCGA*. The document formally recognizes the services that the community gardens provide to the city and the local community (CCC, 2003).

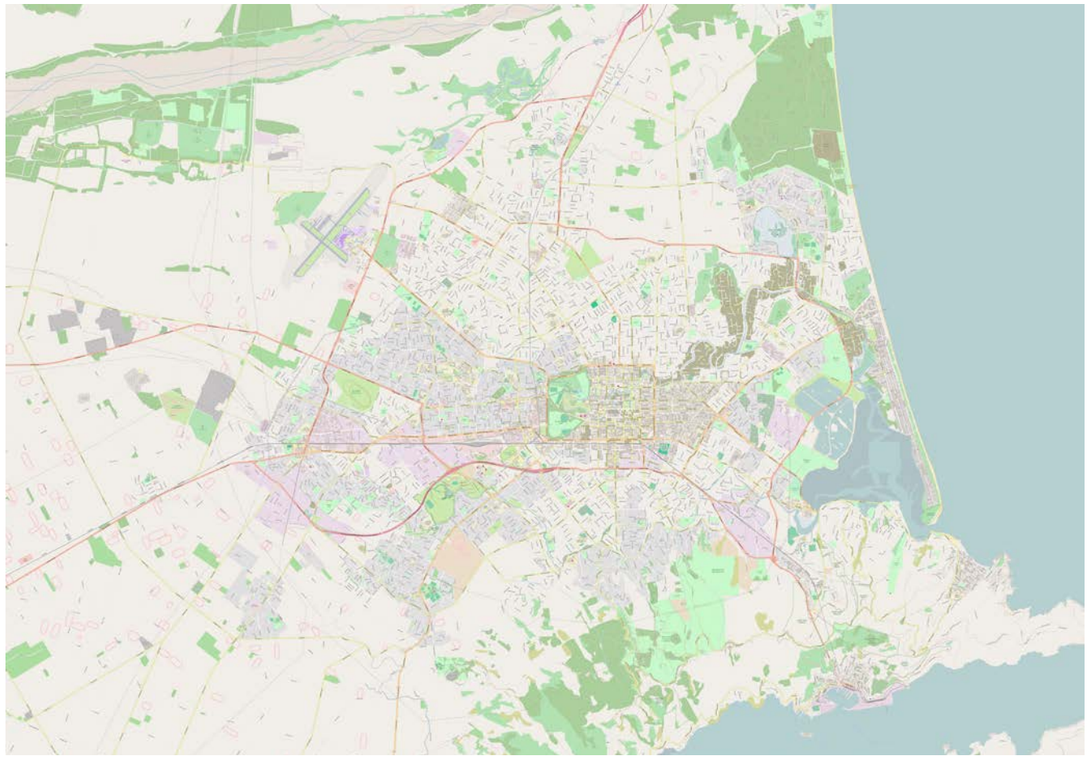


Figure 4. Christchurch Area. Source: Map data © OpenStreetMap contributors

4.2 The Earthquakes

Christchurch became well known as *"Quake City"* since the major earthquakes struck the city in 2010. It is not only the physical damage that affected the urban development, but also the recovery and rebuilding strategies, which offer enticing prospects for the city and at the same time leave room for discussion. This subchapter will describe these processes, in order to understand the role of community gardens in the unique context.

Figure 5. 'Quake City', 2015. Photo: author.

4.2.1 Quake City

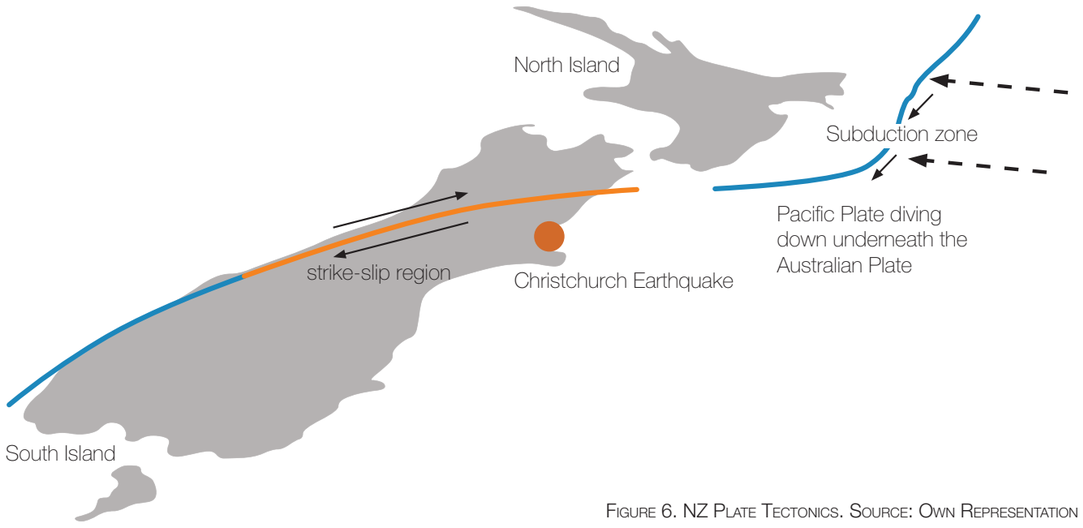


Figure 6. NZ Plate Tectonics. Source: Own Representation

New Zealand is located on top of the Pacific and Australian Plates and affected by the subduction processes of the tectonic movements. On the one hand, these effects shaped the characteristic landscape and created the Southern Alps, but on the other hand they are also responsible for countless earthquakes (GNS Science, 2015).

Most of these quakes are deep in nature, and occur 40 km or more under the surface, but on September 4, 2010, a major earthquake with a magnitude of 7.1 on the Richter scale struck Christchurch. It was located about 35 km from the city center and 10 km beneath the earth. The natural disaster caused widespread damage as brick buildings collapsed and infrastructure broke down. Sewers and water lines were damaged resulting in contamination of water supply and electricity in the city was disrupted. Further damage occurred because of soil liquefaction, when the ground lost strength and stability and sewers and buried pipes floated upwards. In immediate reaction to the earthquake, a state of emergency was officially declared by the civil defense and a curfew was enforced for some areas within the city center. Although no casualties were sustained as the disaster occurred during the night, when most people were at home, two persons were seriously injured.

The recovery works started almost immediately, when an even more severe earthquake interrupted them on February 22, 2011, with a magnitude of 6.3. This second quake is considered an aftershock and was located very close to Christchurch. The epicenter was distanced 10 km from the city and very shallow in nature. The shock occurred 5 km under the surface and the effects on the city center and suburbs were catastrophic. Many old and multi-storey buildings collapsed and core infrastructure was damaged to large extent. Furthermore, seismic flooding occurred due to liquefaction. As the quake shook the city during the day, at lunchtime, many people were on the streets and in business buildings. For these reasons, 185 people lost their lives and almost 7,000 suffered from injuries. New Zealand's prime minister called this disaster the "single-most tragic event" in the history of the country. Several aftershocks struck Christchurch until present day, leaving the city in a state of strain.

Geologists still discuss the origin of these earthquakes, as the February 2010 quake occurred on a unknown fault line. It seems like plate tectonic movements may have reactivated old faults, causing them to fail. So more knowledge is needed on the geomorphologic situation of Christchurch and Canterbury Plains, in order to understand the system of potential fault lines as a basis for the reconstruction process and the engineering challenges (GNS Science, 2015).

Figure 7. 'Damaged Cathedral', 2015. Photo: author.

Figure 8. 'Feeling of Emptiness', 2015. Photo: author.

4. Background

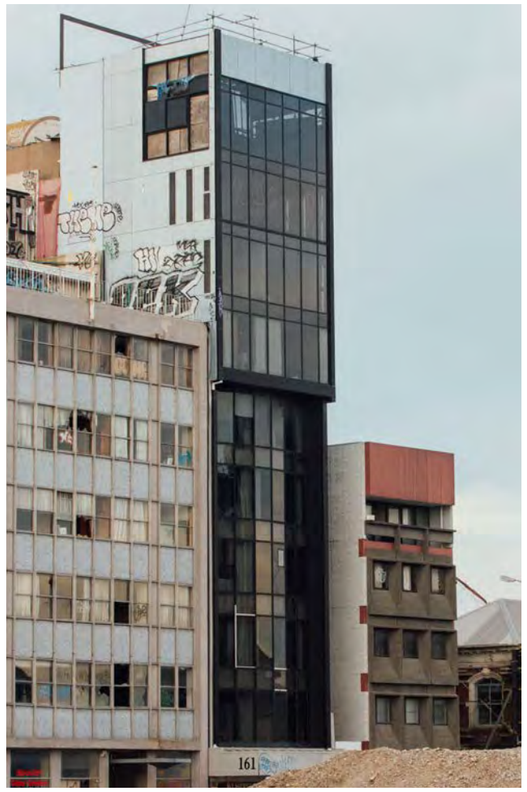


Figure 9. 'Damaged Buildings', 2015. Photo: author.

Figure 10. 'Danger', 2015. Photo: author.

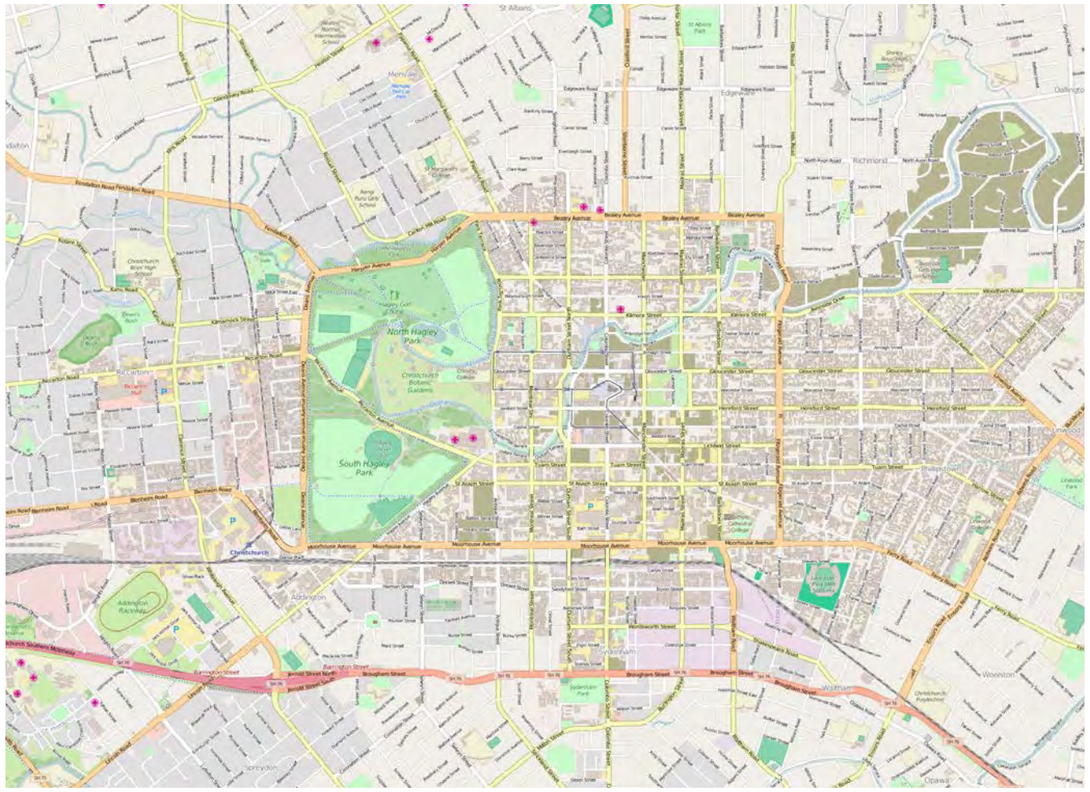


Figure 12. Christchurch City Center. Source: Map data © OpenStreetMap contributors

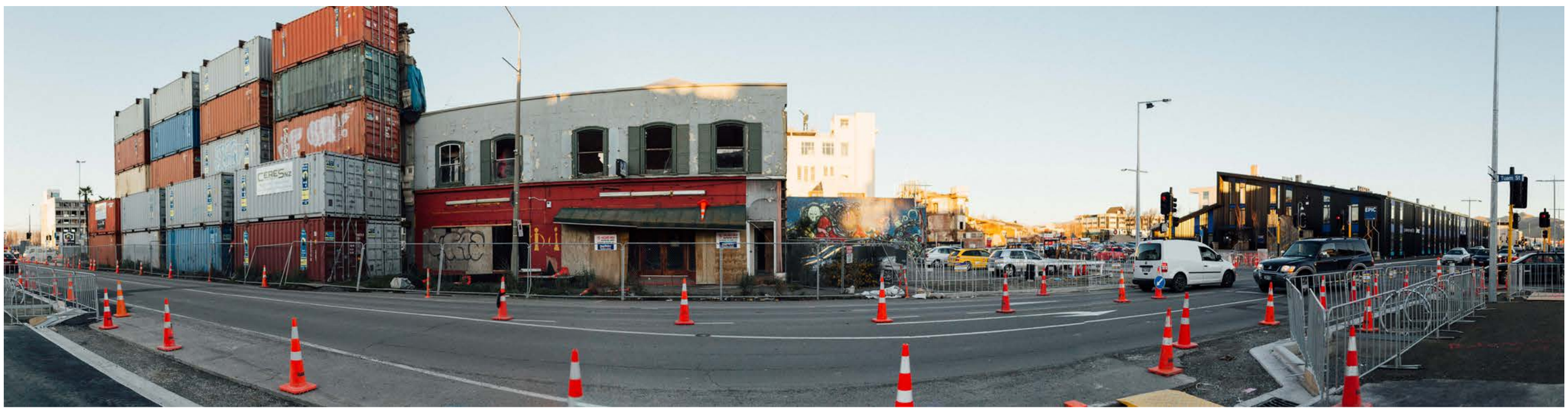


Figure 11. Litchfield Street Damage, 2015. Photo: author.

4.2.2 The art of recovery: From “Share an Idea” to CERA

Figure 13. ‘The Art of Recovery’, 2015. Photo: author.

A strict zoning concept was introduced by government agencies as an immediate reaction to the earthquake. This concept constricted access to several parts of the city and became well known as the *Central City Red Zone*.

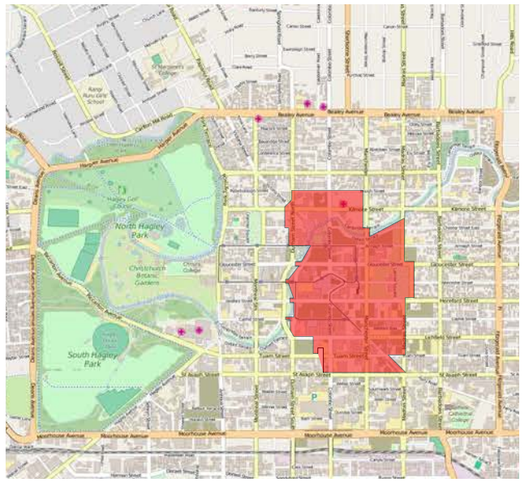


Figure 14. Central City Red Zone. Own representation based on Map data © OpenStreetMap contributors

It was successively reduced in size, as potentials risk were eliminated and reconstruction works progressed.
Furthermore a building assessment program was established which classified remaining objects in green, yellow or red categories in order to prevent further fatalities.
According to the assessment program, buildings that suffered from heavy damages were taken down. This led to an overall loss of urban quality and an overwhelming *“feeling of emptiness”* (Wesener, 2015, p.2).
The restrictive concept of red-zoning was also applied on residential areas outside of the city center, resulting in demolishing large extents of public housing alongside the river Avon. These areas are prone to further damage, as the ground is swampy and instable in nature and not suitable for post-earthquake building projects. This enforced and controversial development became known as *Residential Red Zone* and lead to displacement of thousands of inhabitants, who had to abandon their established neighborhoods and move to temporary housing projects. Furthermore, around 10,000 people left Christchurch after the February 2011 earthquake (Statistics New Zealand).

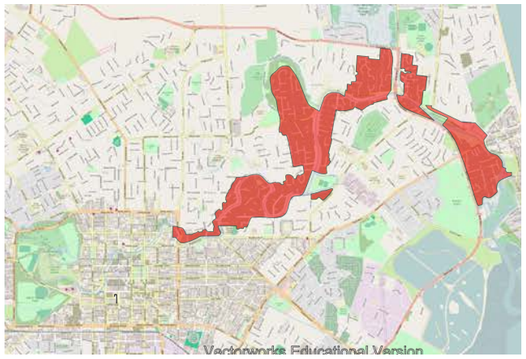


Figure 15. Residential Red Zone. Own representation based on Map data © OpenStreetMap contributors

While the situation in Christchurch moved from initial response on to recovery and reconstruction the question arouse, which long-term vision will be pursued for the post-qarthquake version of the municipal. The *Central City Red Zone* and the *Residential Red Zone* imply a strict top-down approach, guided by the *Canterbury Earthquake Recovery Authority (CERA)*. The organization came to power based on the *Canterbury Earthquake Recovery Act* and was enforced by the parliament of New Zealand. This governmental reconstruction strategy contrasts countless bottom-up initiatives originating in small-scale neighborhood networks or temporary urban interventions. The local counterpart to *CERA* is the *“Share an Idea”* campaign, initiated by the *CCC* with the aim to empower civic society to participate in the reconstruction process. About hundred-thousand ideas were collected during the campaign followed by a transcription process with the help of Danish architect Jan Gehl, to develop a sustainable comprehensive rebuilding strategy. Instead of institutionally supporting the emerging bottom-up movements and cherishing valuable ideas, *CERA* took over and created a blueprint for *Christchurch Business District (CBD)*, in a single-handed approach.

Figure 16. ‘Strength & Resilience’, 2015. Photo: author.

Supposedly, this planning procedure is based on the results from *“Share an Idea”*, but the first presentations showed an urban design and building plan, with spatially and functionally separated districts and additional buffers for private investors. This strategy is clearly moving away from a rich functional mix and new public spaces, desired by the inhabitants (Swaffield, 2013).

Figure 17. ‘Residental Red Zone’, 2015. Photo: author.

Figure 18. ‘Residental Red Zone’, 2015. Photo: author.

Figure 19. ‘Residental Red Zone’, 2015. Photo: author.

Figure 20. ‘Reconstruction works in the city center’, 2015. Photo: Author.

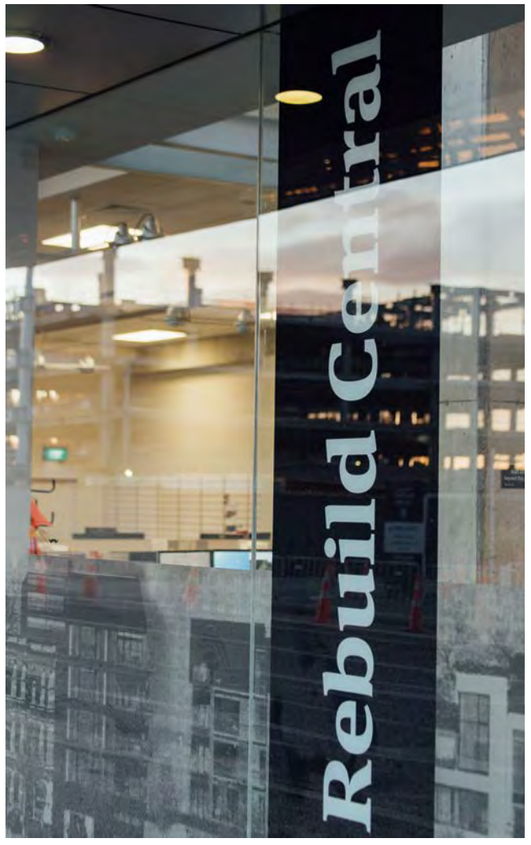


Figure 22. ‘Rebuild Central’, 2015. Photo: author.

Figure 23. ‘Rebuild’, 2015. Photo: author.

Figure 24. ‘Restart Mall’, 2015. Photo: author.

Figure 21. ‘Reconstruction works in the city center”, 2015. Photo: author.

4.2.3 Temporary Urbanism

Despite the restrictive recovery and rebuilding strategy, a vast amount of interim uses and temporary urbanism projects took advantage of the extensive vacant spaces in the aftermath of post-earthquake Christchurch. The desire to bring the city to new life resulted in artistic interventions ranging from graffiti and street art to transitional architecture. While the first projects were spontaneous and unplanned reactions to the disaster, the need for organized bottom-up city regeneration resulted in several initiatives that facilitate temporary projects and communication processes between activists, landowners and authorities. Only four weeks after the earthquake in 2010, two groups called *Gapfiller* and *Greening the Rubble* were founded, with the purpose to create new artistic and cultural atmosphere in the cityscape and enhance biodiversity (Montgomery, 2012). The concept of transitional community-initiated open spaces became apparent throughout the city and some of the initiated projects found widespread success.

Figure 25. 'Common Ground', 2015. Photo: author.

The Commons is a community space located on the site of a former hotel, which was demolished in 2012. It successfully developed to a hub for transitional activity and is a very good example for a bottom-up project, which promoted general acceptance for community-initated spaces. Neither the recovery plan of the *CCC* nor *CERA* included temporary urbanism projects, but both recognize and support them due to obvious public success by providing land or funding (CCC, 2014).

Figure 26. 'Palette Garden', 2015. Photo: author.

Live in Vacant Spaces Trust founded in 2012, is operating as an umbrella organization for temporary projects with the purpose to facilitate communication between authorities, property owners and *custodians*. Unlike other temporary urban projects, the aim of the organization is not necessarily to extend the interim use to permanent concepts, but to evolve the temporary character until long-term activities are established (Live in Vacant Spaces Trust, 2015).

Existing research categorizes the positive effects of community-initiated temporary urbanism projects in *"creating opportunities for positive emotions and experiences", "experimentation and innovation", "creating and strengthening social capital" and "fostering community empowerment"* (Wesener, 2015).

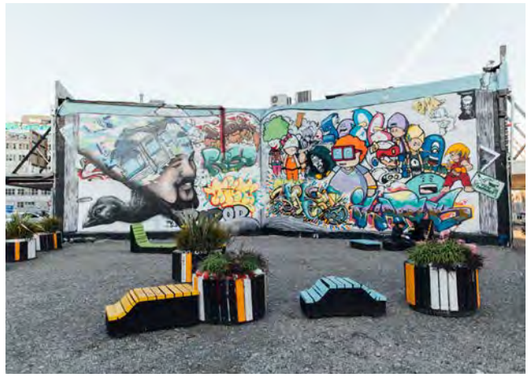


Figure 27. 'Street Art Corner', 2015. Photo: author.

Figure 28. 'Light Installation', 2015. Photo: author.

Figure 30. 'Green Couch', 2015. Photo: author.

Figure 31. 'Repair Café', 2015. Photo: author.

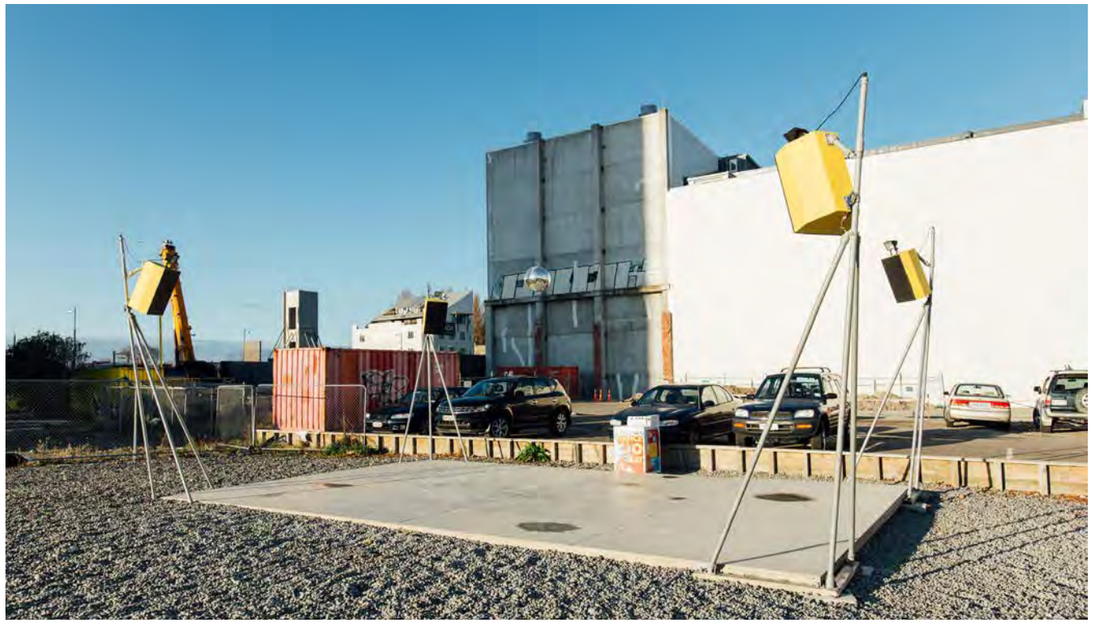


Figure 29. 'Dancefloor', 2015. Photo: author.

4.2.4 Social Capital and Post-Earthquake Community Gardens

This paper is based on existing research on community gardens in Christchurch (Hosted, 2013) and the social capital theory in the context of a natural disaster (Aldrich, 2012).
While ordinary emergency management plans and recovery strategies focus on technical solutions, the value of social resources is easily overlooked.
Although Pierre Bourdieu introduced the social capital theory in 1983, with the purpose of describing social interactions in human networks, Robert Putnam is mostly associated with the term nowadays. The aim of his research was to address problems in collective action by community and trust.
„By ‚social capital' I mean features of social life - networks, norms, and trust - that enable participants to act together more effectively to pursue shared objectives. [...] Social capital in short, refers to social connections and the attendant norms and trust" (Putnam, 1995b, p.664).
This definition was developed under stable social conditions but can be applied to situations of crisis and state of emergency. On the backdrop of the 1923 earthquake in Tokyo, the 1995 Kobe earthquake, the 2004 tsunami and the 2011 earthquake and tsunami in Japan, Daniel Aldrich reflected the social capital theory in context of natural disasters. His findings indicate that social capital can alter individual behavior regarding "exit" and "voice", overcome barriers to collective action and provide informal insurance and mutual aid (Aldrich, 2012, p.157).

- *Exit:* Most natural disasters cause displacement of inhabitants as buildings are destroyed by forces of nature or become inaccessible for the public. Furthermore, curfews or red zones may restrict access to well-known neighborhoods. For this reason, survivors of a disaster may leave a crisis region as immediate response or due to poor recovery progress.

- *Voice:* People with a strong emotional connection to their old neighborhoods or strong social ties to the pre-disaster community tend to return to their homes and become active part of a recovery strategy. This process is highly based on communicative networks with other civilians or authorities and therefore referred to as *"voice"*.

- *Barriers to collective action:* The knowledge-action gap is a well-known problem when dealing with long-term problems and sustainable consumption. However, the same dilemma arises in context of abrupt environmental changes that require immediate collective action. (E.g. Prevention of theft and looting)

- *Informal insurance and mutual aid:* States of emergency require special forms of charity and reciprocity, based on altruistic behavior and motivation. (E.g. Donations, provision of resources)

The selected case studies underlined Aldrich's assumption that areas and neighborhoods with vital social networks and high levels of trust, which existed before the natural disasters, attracted survivors to come back and raise their *"voice"* instead of *"exiting"* and moving away. Furthermore, barriers to collective action were much lower and informal insurance and mutual aid developed a sense of collective safety (Ibid., p. 162).

Building upon social capital theory and its benefits in coping with natural disasters, a deductive research approach by Allen Hosted examined community gardens in post-earthquake Christchurch.
The findings suggest that community gardens are one of many platforms that can activate and strengthen social capital. These effects differ depending on the course of the disaster and the different forms of social capital being involved.
During the immediate response phase, in the first days after the earthquake, close ties among family members and friends were the most essential social networks providing information, comfort and hope. Community gardening does rather not influence these close personal relationships, characterized as bonding social capital.
Throughout the ongoing recovery phase, loose ties among close strangers and distant acquaintances became more important in order to turn back to normal and to organize collective action. Community gardens turned out to be information hubs as well as social meeting spots and furthermore, helped to establish sense of achievement, sense of place and sense of community amongst the participating individuals.
In the further course of recovery, contacts between local neighborhood groups, authorities, NGOs and governmental representatives could be established through the existing garden networks, which is referred to as linking social capital (Hosted, 2013).

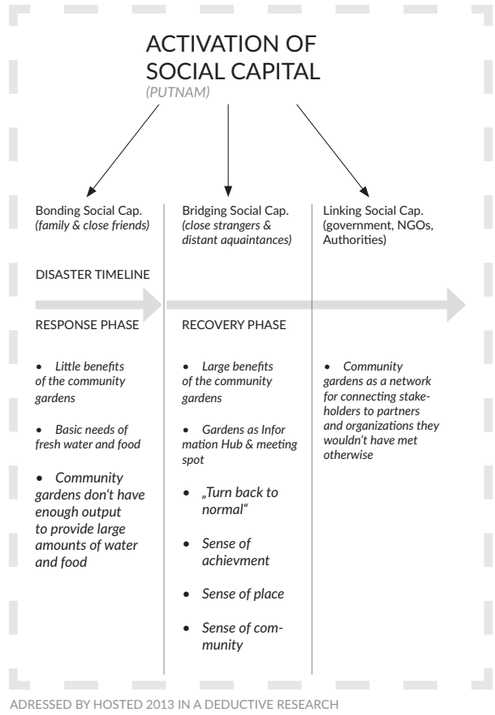


Figure 32. Working Plan STSM, 2015. Source: author.

As outlined in the previous chapters, existing research indicates that temporary urbanism can be a vital part of recovery and reconstruction strategies in Christchurch (Wesener, 2015) and community gardens in post-disaster context can be important platforms for activating social capital (Hosted, 2013). Furthermore, bottom-up initiated communal gardening projects seem to improve individual and collective coping capacities as well as adaptive and participative capacities.

5. Working plan, theoretical & methodological framework

In order to fully understand the benefits of temporary greening solutions and community gardens, as well as human-nature connections in post-earthquake Christchurch, it is necessary to investigate the physical and material dimension of these spaces and the symbolic representative value, which is created and experienced. The aim of the research mission is to shed light on these issues and to explain interlinks between social capital theory, locations of the gardens and individual interpreted value and meaning. This translates into two major research questions:

1. Why were the community gardens established at the present location?
2. Why do the people connect to the community gardens?

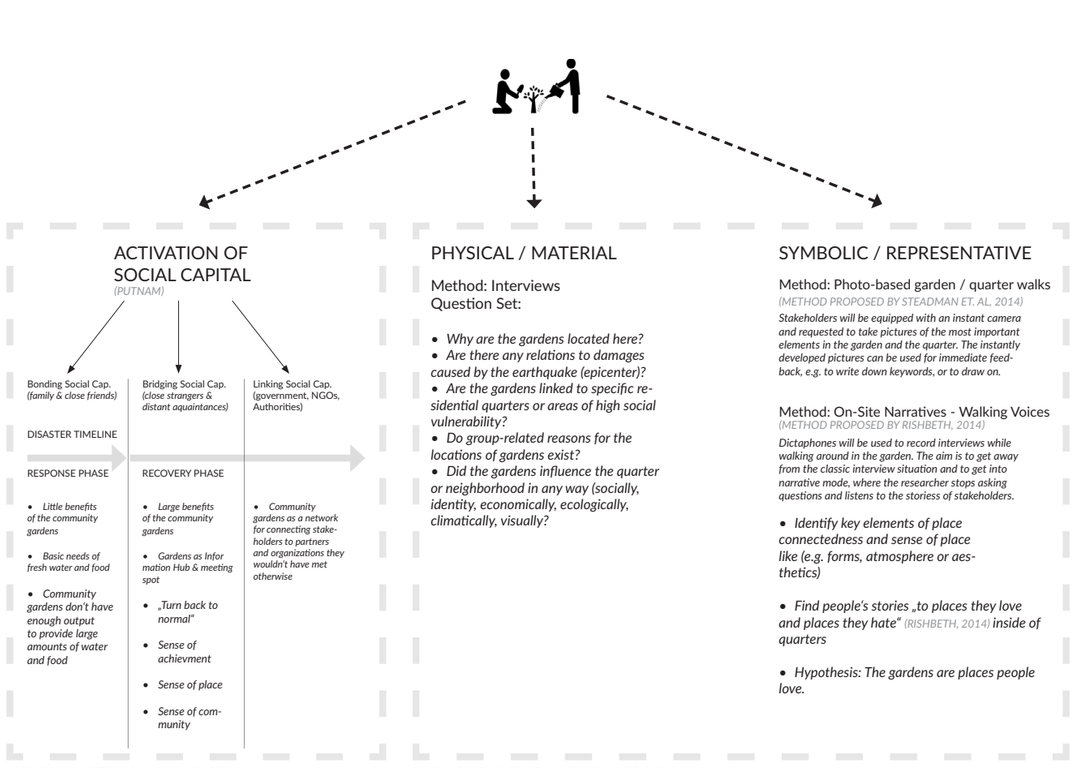


FIGURE 33. WORKING PLAN STSM, 2015. SOURCE: AUTHOR.

5.1 Theory of Place Attachment

"We have all experienced some form of affective bond, either positive or negative, pleasant or unpleasant, with some place or other – a place that can be related to our current or past experience (…) [or] sometimes to the future (…)" (GIULIANI, 2003).

The basic idea of place attachment originates from the question, why people are attached to specific places and how these connections are emotionally associated or judged. There are various definitions within different scientific disciplines, describing place attachment on scales from the individual house to a whole region. For this reason, the type of attachment differs from individuality derived to universally connected (MANZO & PERKINS, 2006).

The power of place and its influence on the human behavior attracted psychologists and sociologists, and so the first knowledge and theory building approaches originated from human sciences. The concept was adapted by environmental sciences in the 1960s to understand the effects of location and forced dislocation of population within neighborhoods and cities (FRIED, 1963).

To meet the requirements of the interdisciplinary roots of place attachment theory, Scannell and Gifford synthesized an across-the-board model:

"The person dimension of place attachment refers to its individually or collectively determined meanings. The physiological dimension includes the affective, cognitive and behavioral components of attachment. The place dimension emphasizes the place characteristics of attachment, including spatial level, specificity, and the prominence of social or physical (both built and natural) elements" (SCANNELL & GIFFORD, 2010, P1).

This model embodies three essential dimensions of place attachment including personal, physiological and place-specific qualities. Mihaylov and Perkins use this conceptualization to describe place attachment more precisely on community scale and to put it in the context of environmental disruption and the resulting community response.

This model offers a comprehensive solution for analyzing the links between environmental disruption, interpretative process based on different forms of place attachment and the resulting community response. The results can be collective, community-level actions, adaptions or acceptance of the disruption. Furthermore interlinks between interpretation and response include the involvement of place-based social networks and social capital (MIHAYLOV & PERKINS, 2014).

This even more sophisticated model for place attachment complements theoretic concepts behind existing research on community gardens in post-earthquake Christchurch, like SCT *(Bridging, Bonding, Linking SC)* and its benefits in disaster context *(Voice, Exit, Barriers to collective action)* (Putnam 1995b; Aldrich 2012). Proposed interlinks to the resilience concept can also be regarded in the model, as the possibly pathway of adaption corresponds to the aspect of social learning and the creation of adaptive capacities (Krasny, Lundholm & Plummer, 2010).

Furthermore it is a valuable framework for the interpretation of concrete results like activation of social capital (Hosted, 2013) and improvement of adaptive and participative capacities through community gardens and opportunities for positive emotions and experiences created by temporary urbanism projects (Wesener, 2015).

This model for understanding the multi-faceted concept of place attachment is not only relevant because of the environmental disruption in form of the earthquake in Christchurch, but also as the enforced Red Zones (*Central City Red Zone* and *Residential Red Zone*) led to the displacement of countless individuals. Therefore, the comprehensive analyses of *place identity* and *place bonding* could provide valuable results for further steps in reconstruction and replanning the city.

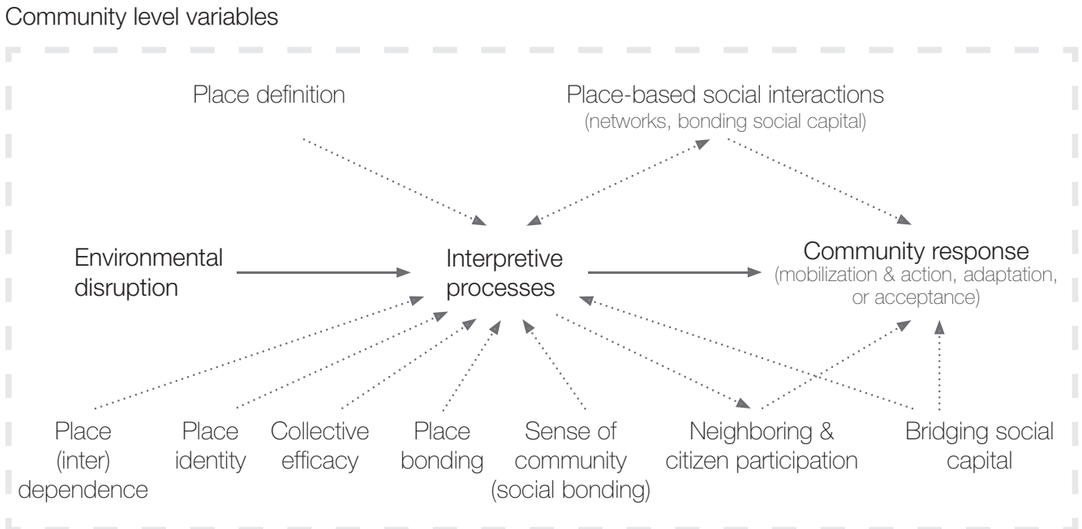


Figure 34. Place Attachment Framework. Own representation based on Mihaylov & Perkins (2014)

5.2 Research design and methodology

This subchapter will explain the research design and the methodology for the *STSM*. The selection of the case studies, the semi-structured interviews and the Instant Photo-Based method will be taken into account.

5.2.1 Case Studies

The raw data of this research mission was collected among 10 community garden initiatives in Christchurch, New Zealand. As outlined in the previous chapters, the city has a long tradition of gardening and a high affinity towards green spaces. The first steps of community gardening in the 1970s developed to a proliferating and flourishing garden network until present day. The *CCGA* was approached as first contact point before the arrival in New Zealand. Lincoln University provided contacts of people who are in the process of setting-up a community garden and not active members of the umbrella association yet. Special care was taken in order to cover the whole spectrum from well-established community gardens to projects in their infancy. Furthermore, it was aimed at including pre- and post-earthquake community gardens in the data collection to identify potential differences related to the disaster.
Further selection criteria will be explained in chapter six. While the first interviews were randomly arranged with people who were willing to participate, word-of-mouth and personal recommendations facilitated arrangements later on and pointed out important key projects. This approach derives from the snowball sampling technique.

5.2.2 Semi-Structured Interviews

Data collection was conducted using semi-structured interviews. This method was applied in order to gather as much information as possible and to keep enough flexibility within the course of conversation. Previous meetings indicated the problem of research fatigue and signs of emotional exhaustions amongst possible interview partners. Especially elderly people are still very emotional about the earthquake and the loss of property or quality of life. Thus, questions about the disaster had to be carefully asked during the conversations to avoid early dialog endings.
The interviews where structured into six main questions with various follow-up questions and additional clarifying questions / probes (Method proposed by Laforest, 2009) and a section for demographic information. The interviews were recorded using a dictaphone and usually started with a small garden walk and a short personal introduction.

Main questions for garden interviews (n=10):

- *What was your start in community gardening?* (Open introductory question)
- *Can you tell me about your garden?*
- *Can you tell me some more about the people in the garden?*
- *Do you like the location of the garden?*
- *Did this garden exist before the earthquake?*
- *What happened after the earthquake?*

A total of ten semi-structured interviews with garden members were conducted and one expert interview with a sustainable advocate, who was an early member of the *Organic Garden City Trust* before it became the *CCGA*. The interview guide was modified for the expert interview in order to take advantage of the expert perspective.

Main questions for expert interview (n=1):

- *What was your start in community gardening?*
  (Open introductory question)
- *Can you tell me about community gardens in Christchurch?*
- *Can you tell me some more about the people in the community garden projects?*
- *What is your opinion about the involvement of professional planning?*
- *How do you think about community gardens after the disaster?*
- *What happened after the earthquake?*

5.2.3 Instant Photo-Based method

As outlined in chapter 5.1, there is a necessity to understand *Place Bonding* and *Place Identity* as basis for *Place Attachment* in context of disaster and environmental disruption. While the theoretic framework is very reasonable and promising, the measurement of (community) place attachment is challenging from a methodological perspective. Visual methods are often preferred to interview questions, as *"Images communicate something different than ‚words and numbers' approaches that constitute more traditional forms of place attachment data collection"* (Stedman et. al., 2014, p.113).
Furthermore, a combination of interviews and visual methods seem to supplement each other as *"the pictures elicted longer and more comprehensive interviews but at the same time helped subjects overcome the fatigue and repetition of conventional interviews"* (Collier, 1957, p.857-858). While photos taken by the researcher often helped to facilitate communication with interview partners, the full potential of photo-based methods can be developed, when non-experts are equipped with cameras and requested to take pictures of
specific places. These pictures can be used to investigate associated symbols or deeper meanings. In conclusion, current literature indicates that, *"Photographic methods seem particularly well suited to the understanding of place meaning and attachment. They offer something new, as communication of attachment and meaning via visual images is fundamentally different from that accomplished solely via text and/or numbers"* (Briggs, Stedman & Krasny, 2014, p.114).

Tidball used a photo-based technique to investigate the role of trees in New Orleans after the hurricane Katrina. Residents of the city were asked to send in pictures of urban forest and reforestation projects in the aftermath of the hurricane (2012b). Further analysis of the pictures indicated a *"positive dependence"* of people and urban nature / natural elements (Tidball & Stedmann 2012).
Building up on these existing methodical approaches a new photo-based method was developed for the *STSM*, with the aim to investigate important key elements in community gardens in Christchurch and to further characterize the emotional bonds. As existing methods lack the component of immediate feedback and direct accessibility of the pictures, instant cameras were given to the interview partners. People were asked to have a little walk and take pictures of the three most important elements in the community gardens. After the photos were taken and the development process of instant camera was finished, people were requested to write keywords down on the pictures including possible emotional associations.
This technique was applied after the semi-structured interviews.

Figure 35. 'Taking Pictures', 2015. Photo: author.

5.3 Methodological Reflection

Photos and pictures *"Can trigger response that might lie submerged in verbal interviewing"* (Collier, 1957, p.854).

Previous publications on post-earthquake Christchurch indicated and described research fatigue amongst survey participants and further symptoms of over-research. This fact was regarded carefully while developing the working plan and selecting appropriate research methods. The Instant Photo-Based method was chosen in order to incorporate a visual technique and to combine it with semis-structured interviews. Photo-based research methods in general seem to be good choices to overcome signs of research fatigue and to avoid a gap between researcher and potential subject. Furthermore they can be very useful in dealing with language barriers and avoiding technical jargon.

All case studies and conducted interviews proved these advantages and taking pictures after the interviews became the most enjoyable part for the interview partners. Especially the instant development process was positively associated with memories from back in the day. At first people were a little overwhelmed by the additional task of operating the camera, but once it came to action they became captivated. While the shadowy representations developed to expressive pictures, people became very talkative and revealed lots of details on the gardens and the community.
None of these details became known during the classic interview situation.
Time constraints made it impossible to address more people from the same garden and to generate multiple pictures from the same project.
After the work was carried out, the researcher took a Polaroid of the interview partner as a gesture of gratitude.

Figure 36. 'Discussing Pictures', 2015. Photo: author.

Figure 37. 'Discussing Pictures', 2015. Photo: author.

6. Community Garden Characteristics

The following chapter will present the ten community garden projects, where the semi-structured interviews were conducted and the Instant Photo-Based method was applied. The selection criteria for the gardens included following aspects:

- Spatial distribution of the gardens within the cityscape ranging from satellite towns over suburbs to the city center
- Pre- and post-earthquake projects
- Well-established community gardens and projects in their infancy
- Temporary and permanent projects
- Style of gardening ranging from communal gardening to individual plots
- Level of governance

Figure 38. 'Planting Mural', 2015. Photo: author.

Figure 39. 'Carrots', 2015. Photo: author.

Figure 40. 'Young Gardener', 2015. Photo: author.

Figure 41. 'Bench', 2015. Photo: author.

Figure 42. 'Seedlings', 2015. Photo: author.

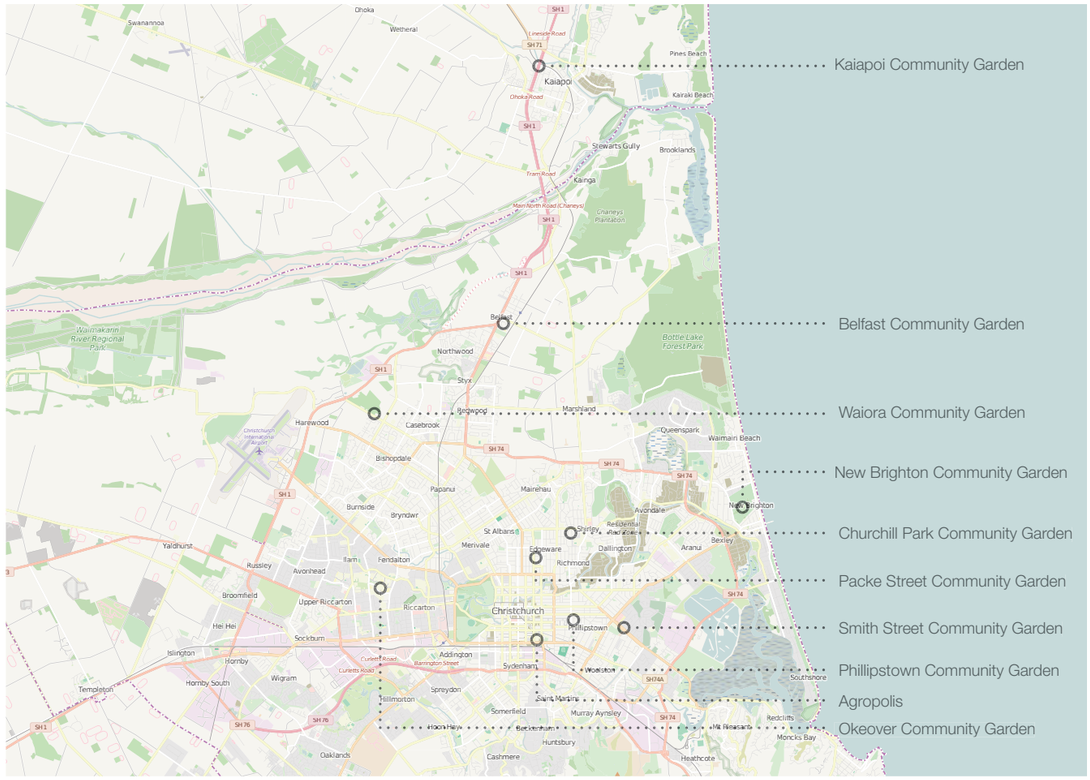


Figure 43. Community Garden Map for STSM. Own representation based on Map data © OpenStreetMap contributors

Figure 44. 'Scarecrow', 2015. Photo: author.

Figure 45. 'Welcome', 2015. Photo: author.

6. Community Garden Characteristics

6.1 Kaiapoi Community Garden

Kaiapoi Community Garden was established in 2010 because of a general interest in Gardening.The founding members got in touch through an ad in a newspaper. The project is located close to Kaiapoi Borough School and pupils from the institution get educated about gardening in the field. The garden is organized by one paid garden coordinator and involves a wide range of volunteers.
The members of the garden project built an extensive garden infrastructure, including raising beds, a greenhouse, and a large compost area.
Kaiapoi Community Garden has won *"Gardener of the Year"* award in 2011.

Date of establishment: Pre-Earthquake
Earthquake Effects: The garden lost members due to displacement
Benefits: Safe place; social meeting point; something else to focus on; people were supplied with food from the garden right after the earthquake

Figure 46. 'Presenting Food', 2015. Photo: author.

Figure 48. 'Kaiapoi CG II', 2015. Photo: author.

Figure 47. 'Kaiapoi CG', 2015. Photo: author.

Figure 49. 'Bug Hilton', 2015. Photo: author.

6.2 Churchill Park Community Garden

The Richmond Community Action Network set up Churchill Park Community Garden in 2013 on a post-earthquake site, which was vacant since the disaster. The surrounding area is used as a temporary park for various events. One garden coordinator and a few volunteers operate it. The project is still in the need for more people to become more prominent.
Due to this fact, the infrastructure of the garden is still basic.
The idea of sharing food, information about food and commons is deeply rooted in the concept of the garden. A basic part of the philosophy is to teach people about *"sharing & caring"*.

Date of establishment: Post-Earthquake
Earthquake Effects: -
Benefits: Helped people to overcome anxiety

Figure 50. 'Churchill Park CG', 2015. Photo: author.

Figure 51. 'Churchill Park CG', 2015. Photo: author.

Figure 52. 'Tell us your Story', 2015. Photo: author.

Figure 53. 'Churchill Park Compost', 2015. Photo: author.

6.3 Belfast Community Garden

Belfast Community Network established the Community Garden in the schoolyard of Belfast School in 2015. The garden cannot be located closer to their community center, because it is classified as temporary building. It is still in its infancy and facing several challenges. There's no garden coordinator appointed yet, who will be responsible for the organization and administration. Furthermore, the garden infrastructure is very basic and there's no shed for socializing or storing tools. The long-term aim of the project is to serve the people from the Belfast Community Garden with fresh food for their common lunch and to increase quality of life around the community center.

Date of establishment: Post-Earthquake
Earthquake Effects: -
Benefits: -

Figure 54. 'Belfast CG', 2015. Photo: author.

Figure 55. 'Belfast CG', 2015. Photo: author

Figure 56. 'Scarecrow', 2015. Photo: author.

Figure 57. 'Belfast CG', 2015. Photo: author.

6.4 New Brighton Community Garden

Local people of New Brighton established New Brighton Community Garden in 2005. The initial motivation was to create a sustainable community initiated project. The first plots were individually organized, but soon a shared garden plot system took over. There are about 120 volunteers involved and one paid coordinator. The participating people have a diverse background ranging from teenagers who have to work of hours of community service to elderly people with a passion for gardening. The project has an extensive garden infrastructure including propagation areas, greenhouses, compost area, seedlings sale and a gardenhouse.

New Brighton is a district of Christchurch, which is inhabited by lots of low income families. Furthermore large parts of this area have been hit very badly by the earthquakes and became *Residental Red Zone*, so the problem of displacement was very prominent. Therefore, 60% of the members come from New Brighton nowadays, but several people drive long distances from all over Christchurch to visit the garden on a regular basis and to keep in touch with their old neighborhood.
Organized workshops on several topics are an essential element of the community work in the garden. The topics include basic gardening skills, sustainable living and natural health. This education aspects is very important for the local community. Over 70 people took part in a workshop of building compost toilets after the quakes destroyed sewage lines and buildings. The New Brighton Community Gardens Trust organizes monthly meetings to coordinate future activities and areas of operation.

Date of establishment: Post-Earthquake
Earthquake Effects: Restricted access, water supply interruptions
Benefits: Provide food to the people of New Brighton after the quake; Skill transfer for self-help; Social meeting point;
Place of consolation

Figure 58. 'New Brighton CG', 2015. Photo: author.

Figure 59. 'New Brighton CG', 2015. Photo: author.

6.5 Okeover Community Garden

The Okeover Community Garden is located close to the University of Canterbury and directly linked to this Institution. It was established in 2002 on a vacant site, but the idea was already introduced in 2000 by Kakariki environment club. The principals of organic growing and permaculture are deeply rooted within the project. Sustainable use and reuse of resources are important concepts for the garden project. Okeover Community Garden is supplied with biodegradable waste from the university and the process of producing own compost is an important part of the volunteers work. There are about ten core people involved in the garden including one paid coordinator.
A wide range of students shows up on an occasional basis and gets involved in community actions. There are no dedicated workshops organized at the moment, but general gardening skills are taught during the opening hours.

The garden was affected in several ways by the earthquake, as the campus was closed. This resulted in a decreased attendance of volunteers followed by a funding crisis in 2012. After the second quake led to a strained financial situation of the university. The working hours of the garden coordinators were reduced and investments in garden infrastructure were cut down as well. There were rather small benefits of the garden in the aftermath of the quakes, as it is rather not connected to the local neighborhood and more related to the university staff.

Date of establishment: Pre-Earthquake
Earthquake Effects: Restricted access; cut off funding; decreased attendance of volunteers
Benefits: -

Figure 60. 'Okeover CG', 2015. Photo: author.

Figure 61. 'Okeover CG', 2015. Photo: author.

Figure 62. 'Okeover CG', 2015. Photo: author.

6.6 Waiora Community Garden

The Waiora Community Garden was established in 1982 as social project for excluded people and transformed into a community garden in 2010. Individual plots are offered in an allotment style system to different groups of people, which is an unusual approach in New Zealand. The infrastructure for garden work including tools, water and seedling is provided by the Waiora Trust and shared amongst the members. The plots will only be given to groups of people who can attend the garden once a week. The produce can be shared in any way within the individual groups. There are 200-250 people involved in the project and one paid coordinator. A rich mix of different people grow their own vegetables in in Waiora Community Garden, ranging from marginalized groups to pupils.

Date of establishment: Pre-Earthquake
Earthquake Effects: Not affected
Benefits: -

Figure 63. 'Waiora CG ', 2015. Photo: author.

Figure 64. 'Soulfood', 2015. Photo: author.

Figure 65. 'Okeover CG', 2015. Photo: author.

6.7 Smith Street Community Garden

Smith Street Community Garden is well-established project, which was set up in 2002. A local community board provided the 1.5 acres of vacant land, after the core group of people successfully initiated communal greening projects around Linwood for ten years. The community garden offers allotments for individual groups and shared plots for everybody who wants to participate. A paid coordinator and at least 70 volunteers operate the garden.
CCC supports the project with funding.

Besides the food production aspect, the garden became an important meeting point and provider of social services, which are spread via the coordinator amongst other community gardens in Christchurch. A memorial garden is included in the project with nameplates for all the people who passed through the trust. All the members share a strong sense of community and celebrate it by common meals and barbeques. There is also a Maori group in the garden, which feels very connected to the land and use it for their native customs.

Date of establishment: Pre-Earthquake
Earthquake Effects: Restricted access
Benefits: Place for being outside and turn back to normal

Figure 66. 'Smith Street CG', 2015. Photo: author.

Figure 67. 'Smith Street CG', 2015. Photo: author.

Figure 68. 'Smith Street CG III', 2015. Photo: author.

6.8 Packe Street Community Garden

The Packe Street Community Garden is one of the oldest Community Gardens in Christchurch. It came to live in 1996 when a group of neighbors from Packe Street encouraged the *CCC* to buy the land as a reserve for a pocket park. The local residents had discovered the potential of this parcel, as kids fell in love with the old orchard and the old stock of trees in 1995. The local community formed a group called "The friends of the park at 125-129 Packe Street Incorporated" and decided to create a park in collaboration with the City Council. This approach became known as the *Adopt-a-Park* scheme.

Due to the involvement of a botanist, the garden has an extensive collection of horticulturally interesting plants. Furthermore, a landscape architect was hired in order to develop and aesthetically pleasing design and to combine existing elements with new planning perspectives. The community garden serves as stage for annual dancing and music events.
The location was not affected during the earthquakes, but old bricks from damaged buildings were used to build raising beds.

Date of establishment: Pre-Earthquake
Earthquake Effects: Not affected
Benefits: Recycle old materials

Figure 69. 'Packe Street CG', 2015. Photo: author.

Figure 70. 'Packe Street CG', 2015. Photo: author.

Figure 71. 'Packe Street CG', 2015. Photo: author.

6.9 Agropolis Urban Farm

The Agropolis project is a new approach to community gardening in a post-disaster context. An urban agriculture enthusiast and an architect initiated the project in 2013 during the *Festival of Transitional Architecture*. It is located on a post-earthquake site with the idea to integrate temporary urban greening solutions in the rebuilding process of Christchurch. Agropolis Urban Farm was developed as a legacy project, carrying on the vison of transitional architecture after the Festival in 2013. The farm was meant to be part of experiment on how different patterns of communal greening would emerge, develop and stabilize during the transitional state of Christchurch. The project was forced to relocate a while ago, as the old vacant site became unavailable.

It is now located on Litchfield street in the *Christchurch Business District* and thus the most "urban" community garden in the city. One paid garden coordinator and a steering committee, which is responsible for decision making, operate it. Because of the exposed location, the project is visited by many people and serves an information hub. Furthermore, it reflects the contrasting quality of temporary urbanism when businessmen meet urban gardens with rubber boots.
Agropolis Urban Farm is equipped with a greenhouse and several container beds. Organic waste from hospitals is transformed into compost on the site.

Date of establishment: Post-Earthquake
Earthquake Effects: -
Benefits: -

Figure 72. 'Agropolis', 2015. Photo: author.


Figure 74. 'Agropolis', 2015. Photo: author.


Figure 73. 'Agropolis', 2015. Photo: author.

6.10 Phillipstown Community Garden

Phillipstown Community Garden is a very new project, which was initiated in summer 2015. It is located on the schoolyard of an abandoned school in Phillipstown. There are around seven people involved in the project, and the aim is to find more volunteers in the close future. *CCC* provides the land in order to fill the schoolyard with new life. The garden infrastructure includes raising beds and a compost area at the present state. Plans for setting up a gardenhouse and picnic tables are in the works.

Date of establishment: Post-Earthquake
Earthquake Effects: -
Benefits: -


Figure 75. 'Phillipstown CG', 2015. Photo: author.

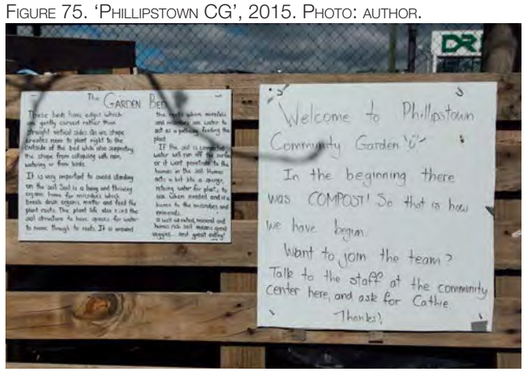


Figure 76. 'Phillipstown CG', 2015. Photo: author.


Figure 77. 'Phillipstown CG', 2015. Photo: author.

7. Results: Community garden locations and place attachment

The results which are discussed in this *Short Scientific Report* are based on notes which were taken down during the interviews and the development process of the Polaroid camera. These pictures were tagged with keywords by the interview partners and this information has also been taken into account. The interpretation of these early findings addresses the two research questions, which are outlined in chapter five. Thus, a preliminary content analysis of the recorded interviews was conducted while writing this report.
There was more raw data collected during the stay in Christchurch, which will be used for future publications, after the transcription of the interviews is finished.

7.1. Why were the community gardens established at the present location?

The answers of the interview partners indicated, that the community gardens were mostly established at locations where a piece of land became available. There are a few interesting stories about the spatial dimension of the projects, which include the origin of Packe Street Community Gardens or the Agropolis Urban Farm. These communal greening projects were created on sites, which have been discovered by local communities and shared the vision to make the neighborhood a more beautiful place.
The other case studies indicated, that the exact locations are often randomly arranged within the cityscape, and reflect the process of negotiation with landowners, city council and garden activists. The stakeholders of the gardens stressed the fact, that the physical location is an important factor, but the biggest challenge is to draw from the local community and to include people from the neighborhood.
The strategic approach of designing community gardens on the drawing board and imposing them on certain city quarters has been subject to controversial discussion. While some people hold the view, that preplanned community gardens could facilitate the establishment of new communal greening projects, most garden activists argued that local needs can only be met by a self-organized, bottom-up process.
The largest positive benefits of community gardens after the earthquakes were experienced in projects that have a strong local connection and are deeply rooted in the neighborhood.
New Brighton Community Garden was often pointed out, as an important element in dealing with earthquake related problems. As it already was a well-established project before the disasters, it could serve immediately as social meeting spot and place of consolation. The organized workshops supported the New Brighton community and transferred skills to cope with the earthquake effects.

7.2. Why do the people connect to the community gardens?

The pictures generated by application of the Instant Photo-Based method, were divided into categories (n=30). This selection process was based on the pictured physical elements. Additionally the (emotional) associations of the photographers and their comments during the development process have been linked to these pictures. This content analysis of the visual research method aims at presenting the most important garden elements of the interview partners and showing the spectrum of possible emotional experiences.
These first results include details, which did not came up for discussion during specific interview questions; e.g. *„Are you happy with your garden?“* or *„Do you think this garden makes the neighborhood a better place?“*. Especially the emotional association and assessment was never part of the verbal articulation.

The socializing aspect and communal production of food appear to be among the most important factors for taking part in the garden projects. This is not an unexpected finding, as these two elements define the general community garden concept. Furthermore, people have a strong connection to natural elements as seedlings, trees or compost.
Collectively built features of community gardens like compost areas and allotments are also regarded as key elements. This fact is also very understandable, as collaborative work is the foundation of community gardening.
The aspect of creating space was pictured in different contexts, as space for activities or plants is unlike to space making (creating space within space). However, both findings share the worldly experience and active process of shaping and improving the individual environment.
Collective learning by doing and gaining practical skills were also seen as essential quality of community gardening and represent interlinks between local communities and collectively build features.
It becomes obvious, that many physical elements embody emotional experiences or bonds and deeper symbolic meanings. The produce as fruits of the collective labor is associated with freshness and quality of life. A picture of allotments was associated to the process of empowering while other plots awake memories of former garden members and the development of the garden project.
Surprisingly, the aesthetic dimension did not influence the individual attachment process. None of the garden members mentioned appearance or design as important element. Instead, natural elements were associated with lifecycles:
Seedlings *“where it all starts”* or *“the spice of life”* and compost *“the driver”*.

Figure 78. Polaroids Scan. Source: author.

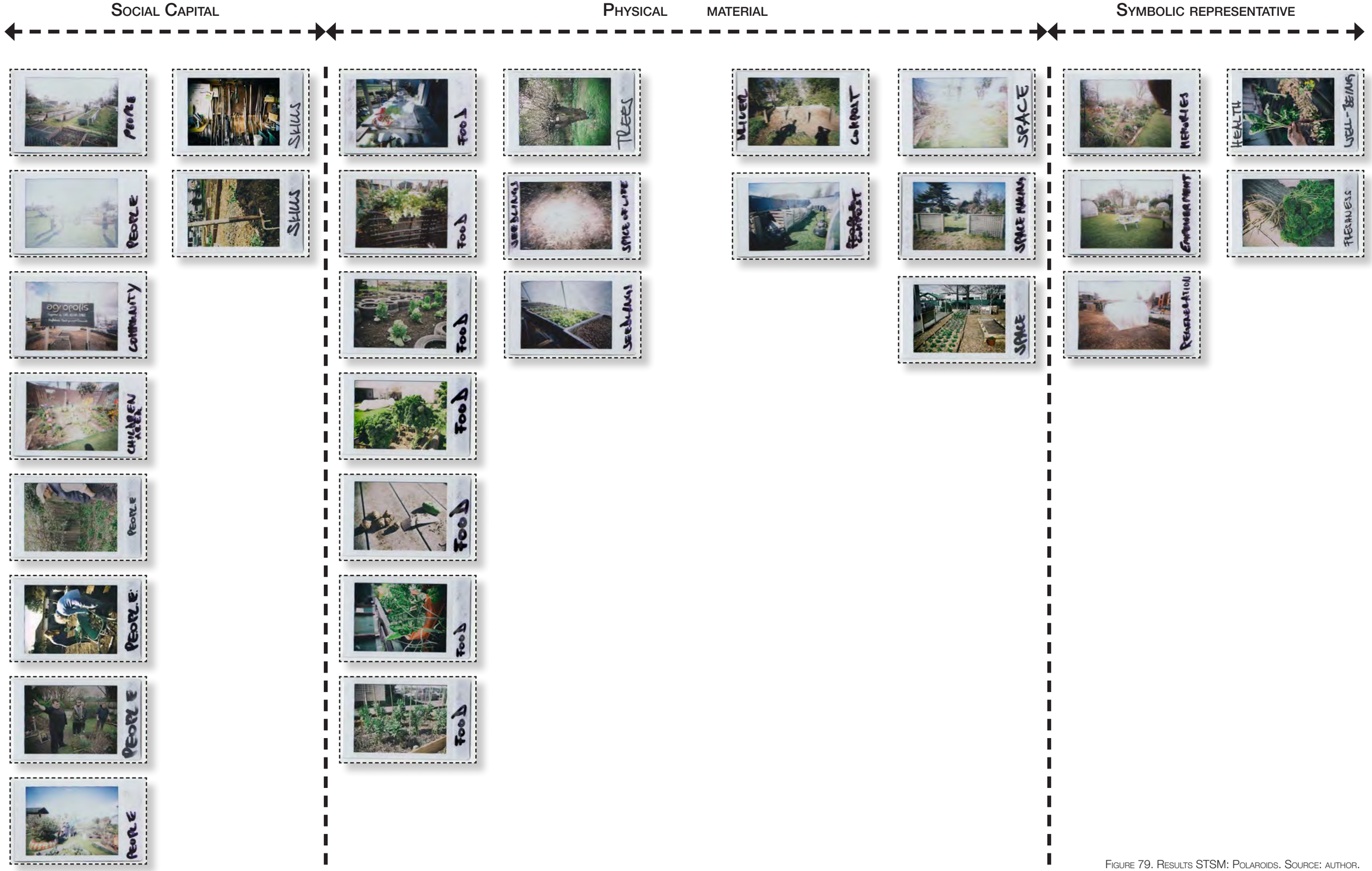
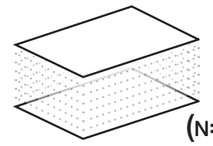
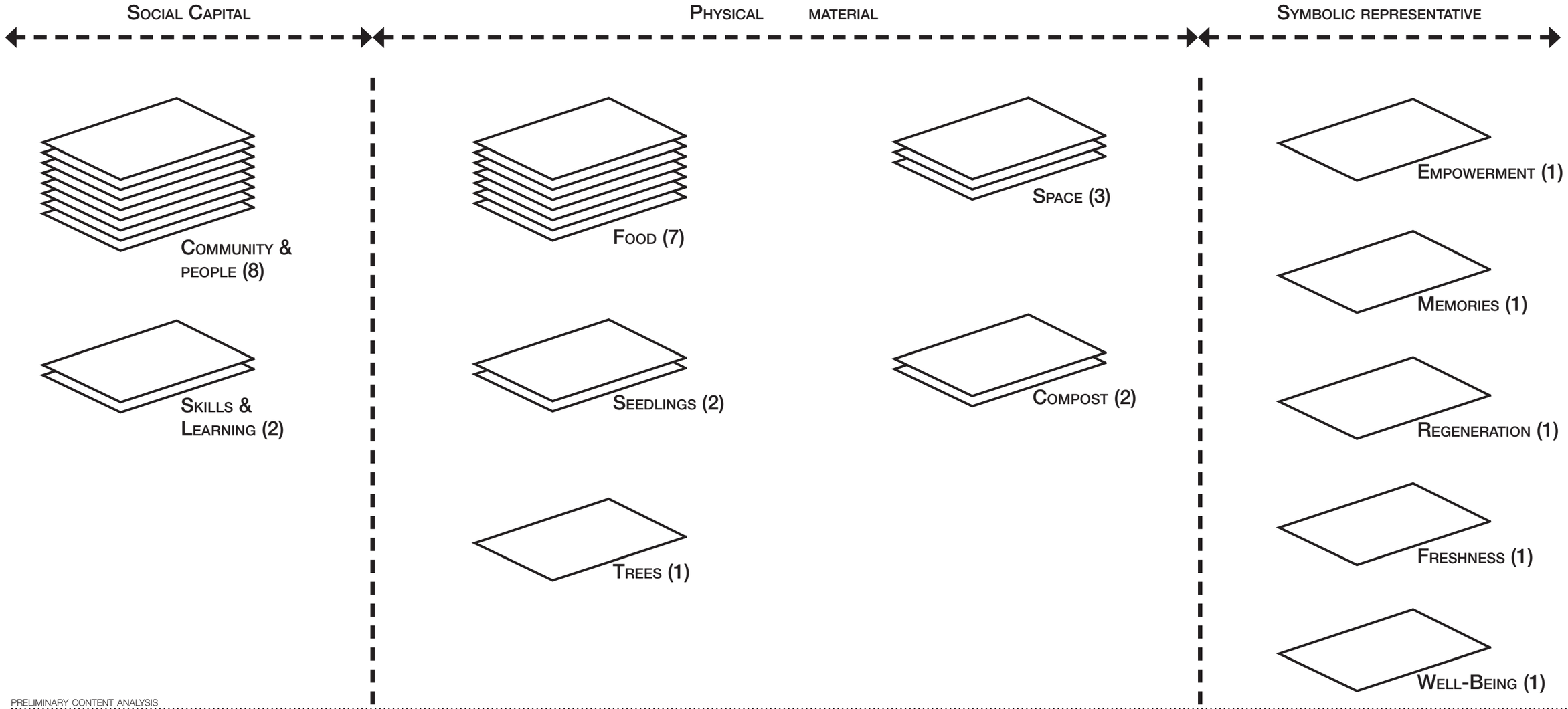


Figure 79. Results STSM: Polaroids. Source: author.





PRELIMINARY CONTENT ANALYSIS

Community & People:
- *"meeting new people"*
- *"overcome social isolation"*
- *"it's about community"*
- *"they just come because of connecting, community"*

Skills & Learning:
- *"so they are coming to learn to garden"*
- *"propagation of young gardeners"*
- *"but it is about teaching as well"*

Food:
- *"produce that's clean and green"*
- *"trying fresh, local food"*
- *"they had no idea food could taste so good"*

Seedlings & trees:
- *"seedlings… where it all starts"*
- *"…but it shows how food and plants that remind you of home, wherever home happens to be in the world become very important at a time of crisis"*

Space:
- *"creating space within space"*
- *"it's about achieving something and creating space"*

Compost:
- *"compost is the driver for the garden"*

Memories:
- *"this place is filled with memories of people who passed through the trust or the garden"*

Regeneration:
- *"gardens can be part of the city regeneration"*

Empowerment:
- *"the allotments empower the people who come here"*

Figure 80. Results STSM: Polaroids interpretation. Source: author.

8. Discussion and Conclusions

The immediate results of the *STSM* underpin previous research on community gardens in Christchurch. The socializing aspect and communal production of food appear to be among the most important factors for taking part in the garden projects. Early outcomes from the interviews and the Instant Photo-Based method show that community gardens are platforms for activating social capital. Especially *bridging social capital* is developed and loose bounds are created between participating individuals (Hosted, 2013). Garden members stressed the fact, that gardening is very leveling and seems to be a good experience for including people from diverse backgrounds and different social classes. One coordinator expressed the assumption, that community gardens work best in multiethnic neighborhoods. Garden members and the interviewed expert described the expression of variety as an essential element of communal greening.

Community gardens are platforms that stimulate place-based social interaction by collective working experience, celebrations or common lunch.

The details on the establisment of the case studies indicate, that community gardens have not been preplanned on the drawing board and imposed on a specific location in a complete top-down approach. In this specific post-disaster context, the question why people form a community around a garden is more promising in understanding the benefits of communal greening projects, than extensive research on the spatial origin.

PAT provides a comprehensive framework for describing the emotional connection between individuals, community and gardens.

The empirical data suggest that simple physical elements like seedlings, compost or garden plots are highly emotional charged and become symbolic representations extending their ordinary physical structure. The displacement process in Christchurch caused by the general damage of the earthquake and the enforcement of the *Red Zones* led to an altered population distribution within the cityscape. Despite this situation, some garden members still come back to their old neighborhoods and participate in volunteer activities. This indicates a strong emotional connection to the garden community and the garden location itself. The attachment process seems to be influenced by social interactions, physical elements and their symbolic representation. However, it could not be clarified which attachment component is the predominating factor.

On the backdrop of these findings, community gardens in post-disaster Christchurch have become important spaces, not only for the production of food, but as landmarks and places of consolation in crisis-ridden environments. This underlines Daniel Aldrich's reflection of social capital theory in disaster context, as community gardeners overcome a forced *"Exit"* and raise their *"Voice"* to become part of *"Collective Action"* (Aldrich, 2012).

When put in context of the resilience concept, community gardens in Christchurch seem to tick boxes for *"Learning to live with change"*, *"Nurturing diversity for reorganization and renewal"* and *"Combining different types of knowledge for learning"* (Folke et al., 2003).

Community gardens in post-earthquake Christchurch occupy their place in the long history of *"Gardening in Times of Crisis"*, although the context of a natural disaster differs markedly from man-made catastrophes as wars and economic depression.

The results of the *STSM* outline the strong connection between individuals and community gardens; community greening projects can become vital elements in self-organized recovery approaches. However, the constrictive time frame of four weeks made only a snapshot of research possible. The arrangements of interviews took longer than expected, although first contacts were made prior to arrival in New Zealand. Bad weather further delayed meetings with contact persons and field trips. Occasionally interview partners were overwhelmed by the multi-method approach of taking part in interviews and operate the instant camera afterwards. For this reason, the idea of recorded neighborhood walks, which was part of the working plan, had to be omitted. This resulted in a research gap, which could be addressed in the future.

Additional research could put community gardens in context to other community-initiated (transitional) projects as well as formal recovery strategies. The place attachment model used in this research describes diverse parameters *(e.g. Place Identity, Place bonding, Place-based social interactions)* that influence the interpretative process after an environmental disruption and leads to a community response (Mihaylov & Perkins, 2014). Thus, the contrast between enforced displacement in Christchurch and emotional attachment processes of individuals or groups is an interesting scope for creating new knowledge.

More research on the reasons why people *"love"* or *"hate"* places in post-earthquake Christchurch could contribute to new planning approaches mitigating the impacts of traumatic disaster experiences (Rishbeth, 2014). Some people seem to have shocking memories, which are connected to certain places in the city. For this reasons damaged buildings or the city center in general are very evocative.

9. Foreseen Publications

After the transcription of the semi-structured interviews, which were conducted during this mission, parts of the raw data will be used for a co-authored scholarly journal paper on enablers and barriers of community gardens. The publication will be based on results from a literature review and international case studies. Christchurch will be one of the case studies.
The working title for the paper is *"Urban Community Gardens, which factors support or obstruct their development? A critical analysis of different approaches and key factors in an international context"* and it is planned to be submitted in April 2016.

The results of the Short Term Scientific Mission are planned to be presented at a *COST Action TU1201: Urban Allotment Gardens in European Cities* meeting.

Furthermore, there was data collected during the *STSM*, with the purpose to do research on the resilience aspect of community gardening. Christchurch is working on a *"Food resilience policy action plan"* (CCC, 2014), so this topic could be good basis for further publications.

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