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Local responses to disaster: The value of community led post disaster response action in a resilience framework

Raven Marie Cretney

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Raven Marie Cretney
RMIT University, Melbourne, Australia

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Abstract

Purpose – When the devastating 6.3 magnitude earthquake hit Christchurch, Aotearoa New Zealand on the 22 February 2011 the landscape of the city and its communities were irrevocably changed. The purpose of this paper is to provide case study evidence demonstrating the role of a grassroots organisation in shaping a community defined concept of resilience through self-organised disaster response action.

Design/methodology/approach – The case organisation, Project Lyttelton is a community group, located in the suburb of Lyttelton, dedicated to building community and resilience through local projects and action. This case study was conducted through in-depth qualitative interviews with key members of the organisation, as well as key individuals in the broader community.

Findings – This research has found that Project Lyttelton played a strong role in providing avenues for citizen participation post disaster. Of particular significance was the role of the timebank in providing an already established network for active participation by citizens in the response and recovery. Other findings outline the importance of pre-disaster community activity for facilitating social support and social learning.

Originality/value – This research contributes to the literature by providing case study evidence for the value of a community led and defined framework of resilience. The findings of this work support the need for further integration and support for local community led preparedness and response initiatives and demonstrate the possible value of pre-disaster community preparedness activities. Consequently, this work is of use to academics interested in the role of community following disasters, as well as emergency management practitioners interested in possible pathways for fostering and encouraging locally focused disaster preparedness activities. The findings may also be of interest to community groups working in the sphere of community building and resilience.

Keywords Social support, Christchurch earthquake, Emergency response, Preparedness, Community resilience, Social participation

Paper type Case study

1. Introduction

Within the disaster studies and hazards management discipline resilience has, for many decades, referred to the ability of societies and places to cope with and prepare for hazards and disaster events, both the expected and unexpected (Buckle, 2006; Manyena, 2006). However, with the proliferation of resilience discourse throughout varying disciplines, from ecology to psychology, the concept is increasingly used in a variety of contexts, including in organisations and collectives such as the World Bank and European Union (Béné *et al.*, 2012; Cretney, 2014). This widespread use has led to some important critiques and calls for the framework to be avoided or even abandoned (Cote and Nightingale, 2012; MacKinnon and Derickson, 2012).

However, the long-standing use of the term in the disaster studies field, combined with increasing recognition of the concept, will most likely contribute to the ongoing use of resilience, particularly with regards to disaster response and recovery. Importantly, according to Tierney (2014), the increase in the prevalence of resilience in the last decade is indicative of an important evolution in hazards management that has led to more focus on the role of social organisation and adaptive capacities.

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This paper explores through case study evidence the role of community grassroots organisations in shaping their own definition and enactment of community resilience to disasters during the Canterbury earthquake sequence of 2010/2011 in Aotearoa New Zealand. This research emphasises the role of pre-existing community led activities that support and build community resilience to disruptive events such as disasters. Through focusing on activities that are created and driven by community organisations, this paper demonstrates the value of community led activities as a mechanism for aiding integrated response to disaster events. To do so provides further evidence for the importance of community involvement in disaster preparedness, response and recovery and supports the broad move away from the command and control approach (Handmer and Dovers, 2007; Pearce, 2003).

This paper details research that was undertaken in June 2012, approximately one and a half years after the first earthquake in September 2010, and six months following the last magnitude 6+ earthquake in December 2011. The research is focused on the immediate response actions undertaken by the case study community group "Project Lyttelton" which is based in Lyttelton Harbour on Banks Peninsula. Lyttelton is based over the epicentre of the devastating 22 February Christchurch earthquake which resulted in the devastation of much of the main street and many iconic venues and buildings. Despite this, the community has rallied and come through the disaster. The response provided by Project Lyttelton was desperately needed in the days immediately following the 22 February quake as centralised services were largely concentrated on urban search and rescue efforts in the Central Business District of Christchurch City.

The methodology employed for this research includes in-depth qualitative interviews with key informants from the community and participants in the Project Lyttelton group. These were conducted alongside e-interviews with community members. In-depth face to face semi-structured interviews were carried out with six individuals who were highly involved in the Lyttelton community, over a period of two weeks. Informed consent was required, and all participants were made aware that the interviews would involve questions related to their experiences of their community's response and ongoing recovery to the earthquakes, but not details of the earthquake event itself. This line of inquiry reduced the risk of re-traumatisation and focused on the constructive elements of participant experiences (Collogan *et al.*, 2004). Participants were also asked questions relating to how they understood and defined community resilience.

Furthermore, e-interviews followed an emerging methodology that provides a less intense and time-consuming form of participation for community members (Jensen, 2010). These e-interviews were carried out through an online survey platform that engaged open-ended questions, similar to those used in the semi-structured interviews. The survey was distributed throughout online groups and e-mail lists for the Project Lyttelton organisation. Eight participants completed the online interview form, providing in depth details of their experiences and opinions, resulting in data that was of similar depth to face to face interviews.

The paper will begin with a further exploration of the community resilience framework utilised in this study. Following this, the Canterbury earthquake sequence and the case study organisation Project Lyttelton will be described. The actions of participants and Project Lyttelton will then be explored in depth in relation to key social community resilience characteristics. To conclude the important role Project Lyttelton played in the overall response will be discussed, including the challenges they faced and the possible applications of these lessons in other organisations and contexts.

2. Community resilience frameworks

Community resilience in broad terms refers to the ability of localised (usually geographically defined areas) to respond, cope and adapt to change through communal actions (Berkes and Ross, 2013; Magis, 2010). Manyena (2006) notes that there is a lack of clarity and consensus particularly regarding indicators of community resilience. To clarify the concept some authors such as Norris *et al.* (2008) have attempted to consolidate the many possible indicators and capacities of community resilience. Their approach sees community resilience as a metaphor for the ability of a community to cope with disruption and to link their experience and networks with an ability to enact adaptive capacity (Norris *et al.*, 2008).

Community resilience also relies on the ability of those in a community that share circumstances to work together to overcome challenges and increase their ability to deal with future events (Gunderson, 2010; Norris *et al.*, 2008). Adaptive capacity is an important part of community resilience that highlights the ability to not just respond to crises but also reduce the impacts of future events. As shown in Table I many authors have suggested frameworks that build on a diverse range of indicators and areas of development within resilience theory. Berkes and Ross (2013), for instance, have suggested an important contribution by discussing the integration of socio-ecological systems theories with psychology and community development in order to deepen the engagement of community resilience theory with social factors.

In relation to disasters community resilience can be described at several levels (Dale *et al.*, 2010; Paton and Johnston, 2001). This can include the ability to recover functions and infrastructure to levels similar to which existed prior the disaster, as well as the ability to adapt and cope with future disasters (Berkes and Campanella, 2006; Cutter *et al.*, 2014). As noted by Paton (2006), while many see the role of resilience as relating to the definition of "bouncing back" to the pre-disaster state, the reality of post-disaster circumstances mean that moving forward is desirable. This is an important part of increasing a community's adaptive capacity to reducing risk and vulnerability (Adger, 2005; Vallance, 2011).

The approaches for incorporating this framework as a tool for disaster response and recovery are varied, and as noted by Cutter *et al.* (2014), the number and variety of these approaches are increasing. Here, community resilience can also be seen as relevant to the different stages of a disaster. Particularly during the immediate response to a disaster, the ability of individuals and communities to respond is seen as an important asset. This is especially salient given increasing awareness that lay people are often the first responders (Vallance and Carlton, 2014).

Furthermore, participation and involvement of the community during ongoing recovery is integral to building trust and buy-in for recovery projects (Aldrich, 2012; Thornley *et al.*, 2015; Vallance and Love, 2013). Here, the ability of a community to respond is seen as an important avenue of participation for local residents and organisations to be involved despite the absence of official training and organisation (Thornley *et al.*, 2015). This participation is seen as desirable, not only due to the limitations of government funds, but also due to the efficacy of involving communities that have local knowledge and skills that can be utilised in a disaster response and recovery situation (Coles and Buckle, 2004; Thornley *et al.*, 2015; Vallance, 2011). Thus, community resilience capacities can apply not only to the immediate coping skills necessary for dealing with a disaster event, but also with the ongoing processes of recovery, particularly through elements of adaptive capacity.

Authors	Elements of community resilience
Magis (2010)	Summary of multiple documents on community resilience that suggests the following indicators: Community resources Development and engagement of community resources Active agents Collective action Strategic action Equity Impact
Cutter *et al.* (2014)	Paper suggests engaging with 49 indicators across the following categories: Social resilience Economic resilience Community capital Institutional resilience Housing/infrastructure resilience Environmental resilience
Norris *et al.* (2008) and Sherrieb *et al.* (2010)	Research which explores four networked sets of community resilience capacities: Economic development Social capital Information and communication Community competence
Berkes and Ross (2013)	A community resilience framework integrating social science approaches and socio-economic theory. This suggests set of strengths and characteristics that lead to agency and self-organisation within a community including: Engaged governance Community infrastructure Social networks Knowledge, skills and learning A diverse and innovative economy
Burton (2015)	A study of community resilience following Hurricane Katrina using a wide range of indicators in the following categories: Social resilience Economic resilience Institutional resilience Community capital Environmental systems resilience
Thornley *et al.* (2015)	Community resilience research based on findings from multiple Christchurch case studies that suggests the importance following factors: Community connectedness Community infrastructure Participation in disaster response and recovery Engagement in decision making

Table I.
A selection of community resilience frameworks and suggested indicators

This research engages with the concepts of community resilience as they are becoming an increasingly used framework for understanding and supporting disaster response and recovery at government and community levels (Tierney, 2014; Paton and Johnston, 2001). Furthermore, the actions of many community groups are now undertaken in the name of resilience despite a wide ranging interpretation and application of the concept

(Cretney and Bond, 2014). Because of the diversity of factors and traits related to community resilience this paper has not attempted to contribute to the debate on what the ideal indicators of community resilience should be. In this context, this paper is based on a framework of community resilience that is an aggregation of social factors described in various elements of the literature. This framework pays specific attention to the role of socially determined factors that were built by pre-disaster community activities and those that have contributed to on-going processes of adaptive capacity following the disaster event. As this research follows a qualitative methodology, these factors are related to the social and organisational capacities of a community in relation to the experience of disaster response. Following Norris *et al.* (2008) the capacities analysed stress the importance of regaining optimal social functioning post-disaster, as well as the ability to envision and engage with adaptive trajectories of future development.

To simplify the range and diversity of socially oriented factors described in the literature on community resilience, this work has aggregated these dynamics into four broad and inclusive categories of community action. Two of these factors relate to pre-existing community activities that affected the communities response to the earthquake events, and two relate to the community's ongoing adaptive capacities. As described in Table II, social support and social participation outline the capacity of the community to respond to the disaster event. While social memory and social learning describe the ability of the community to contribute to adaptation as a result of the disaster.

Thus, this research provides a narrative of community led and defined action in a post-disaster context to understand in more depth the experiences of practised community resilience to disasters in both response and adaptation.

3. The Canterbury earthquake sequence

The Canterbury earthquake sequence has been one of the most devastating disasters to affect the country of Aotearoa/New Zealand in recent history. In the early hours of the morning on 4 September in 2010, a 7.1 magnitude earthquake, known as the Darfield earthquake struck in the middle of the Canterbury region, 40 kilometres east of

	Community resilience factor	Description	Related literature
Coping and response capacities	Social support	Informal support that can be drawn on for real assistance both in material and emotional contexts	Cutter *et al.* (2008), Norris *et al.* (2008), Sherrieb *et al.* (2010) and Thornley *et al.* (2015)
	Social participation	Formal networks that provide avenues for participation, engagement and assistance within a community	Cicognani *et al.* (2007), Berkes and Ross (2013), Magis (2010) and Thornley *et al.* (2015)
Adaptive capacities	Social memory	The capacity for memorial and social repositories of important events, insights and features of a community	Bodin *et al.* (2006), Adger (2000) and Wilson (2013)
	Social learning	The ability to collectively and institutionally learn from and adapt to disruptive events	Bodin *et al.* (2006), Gunderson (2010), Tidball *et al.* (2010), Tidball and Krasny (2007) and Wilson (2013)

Table II. Community resilience factors used in this research to demonstrate social capacities for both response and adaptation

Christchurch city. While the earthquake caused substantial damage and was a shock to many residents who had not previously seen Canterbury as a geologically active region, no lives were lost. However, the subsequent magnitude 6.3 Christchurch earthquake on the 22 of February 2011 resulted in the loss of 185 lives. This tremor also caused considerably more damage to residential and commercial buildings and infrastructure than the September event (Canterbury Earthquakes Royal Commission, 2012).

The case study for this research is based in the suburb of Lyttelton. Lyttelton suffered significant damage from the 22 February earthquake, including physical isolation to the city of Christchurch due to landslides and concerns over the safety of the main access route through a road tunnel. In the town, the community rallied to provide immediate support and services to those in need. This research explores the actions of the organisation Project Lyttelton to understand their ability to contribute to community resilience capacities. The group follows their main aim of "co-creating a sustainable, empowered, resilient community based on values, inclusion and participation" (Hall, 2009, p. 8). Prior to the earthquakes the group worked on projects such as establishing a regular farmers market, Timebank[1], seasonal celebration festivals, courses and workshops.

During the recovery from Darfield earthquake event in September 2010, Project Lyttelton, and in particular the Timebank, were not heavily involved in the official response carried out by the Civil Defence, the localised emergency response authority in Aotearoa New Zealand. However they did carry out extensive activities in their local community and in conjunction with other organisations in the area. Because of this gap in the provision of services for the community in partnership with Civil Defence, the organisation began networking with officials in the emergency management sector to encourage greater involvement of the Timebank within emergency services for future events. This networking became the foundation for their future activities.

As Project Lyttelton was established as an organisation explicitly to build community and encourage resilience the group was able to put into practice many of their skills and strengths to facilitate a citizen-led recovery response to the 22 February earthquake. During and after the earthquake recovery period the organisation facilitated many projects. This included an alternative school for local children, a Timebank operation devoted to post-earthquake requests, a co-ordinated approach to checking on the elderly and many other community events, including a community sewing project to brighten fences surrounding rubble from collapsed buildings.

The following sections explore the actions of Project Lyttelton in relation to a community resilience framework that emphasises the social capacities of responding to the disaster. This framework is described below following a detailed discussion of the work carried out by Project Lyttelton in relation to the capacities of social support and participation, social memory and learning and diversity.

3.1 Community defined resilience in Lyttelton

When participants were asked how they envisage a resilient community the most common theme was the social relations that had supported them through the earthquakes. One participant noted "the whole thing is about the connection between people. That you're caring, that you know, you feel cared for, you can care for someone else" (Interviewee 3). This sentiment was echoed by other interviewees who also saw a resilient community as being "very connected and very responsive" (Interviewee 7) or "a community where everyone looks out for each other" (Interviewee 6). One participant even noted "I think resilience is the wrong word […] It was just helping each other"

(e-Interviewee 2). Discourses of community and social relationships were commonly highlighted in relation to what participants saw as a resilient community. This theme suggested that the main focus of members of Project Lyttelton was on building connections, relationships and networks that have been deemed important.

Highly involved members of the group also indicated a wide understanding of resilience by discussing the implications of disasters on the resilience of physical infrastructure, food supply and broader ecological limits. Such considerations acknowledged the role of resilience beyond social connection into broader areas of concern such as the provision of resources, food and fuel, expressing discourses of the pragmatic realities of post-disaster survival.

Others displayed a strong understanding of the interconnected systems that support resilience. For instance, the physical isolation of the town as a result of closed infrastructure and the geography of the environment, prompted some participants to take a more integrated view of aspects of disaster response such as food supply. This led the community to explore creative alternatives to centralised food distribution such as a garden produce sharing stall and the establishment of a food co-operative. These participants noted the interconnections between different systems of production, transportation and disruption, and the need to enact a functioning community alternative.

However, individuals in Project Lyttelton largely understood the concept of resilience during the disaster largely within the framework of social life, including their friendships and networks. Such an understanding was broadly consistent with the literature on community resilience, but with a stronger focus on discourses of community, social needs and relationships.

4. Social support and participation in Lyttelton

Social support and participation are an important representation of many facets of community resilience described in the literature. Here, social support and participation act as a broad category to describe the ways that individuals can be involved in their community, including the ways these relationships are built and link together. Social support is represented by informal networks within a community such as family and friendship relationships that build support mechanisms (Sherrieb *et al.*, 2010). Similarly, social participation is based on formal networks at an organisational level that provide community support mechanisms in times of need (Sherrieb *et al.*, 2010). Social support and participation are important for community resilience as they provide networks of assistance, caring and support (Norris *et al.*, 2008).

Cicognani *et al.* (2007) state that within the community context, formal avenues of participation can include involvement in voluntary, political, cultural and sports activities. Project Lyttelton provided many avenues for the community to become involved in the group through specific projects such as community gardens, workshops and official organisational roles (both paid and voluntary). This culture of projects and involvement in the community provided the foundation for post-disaster recovery activities.

One of the most successful activities in the earthquake response was the adaptation of the Timebank for a post-disaster scenario. Timebanking is a means of reciprocity or trade, based on skills and time rather than money (Cahn, 2004). Time and skills are valued equally with trades being carried out through time credits to the value of one hour per credit. The network was utilised alongside other formal networks such as the Civil Defence and New Zealand Army immediately following the February 2011

earthquakes. One interviewee who was integral to the operation of the Timebank described the situation:

> At the time of the earthquake [in February] you had in the emergency place [the Civil Defence Headquarters] the navy, the army, the police, the fire brigade, ambulance and Timebank. They'd have these briefing sessions every day […]. Timebanking's [role] was being able to have the ability to link people very quickly. So you'd send out broadcasts, they might say we need ten people for doing such and such and people would self-select (Interviewee 2).

The integration of the Timebank with formally recognised support agencies allowed for it to be acknowledged as an avenue for participation, as well as improving the ability of the recovery response to meet the needs of the community. The Timebank also aided the immediate disaster response through providing people with assistance for repairs, helping the Navy distribute food and through providing meals for the elderly.

One of the ways that this formal avenue of participation was valued by interviewees was that it provided a way for untrained citizens to become involved at a local level. As a result, the Timebank acted as a facilitator for citizen engagement. In other parts of the region where this was not available there was a feeling that this volunteer capacity was underutilised. For example, the same interviewee who dealt extensively with the Civil Defence said that they "were turning people away" in Christchurch city as they did not have a way to cope with the number of untrained people volunteering (Interviewee 2). The interviewee also noted that the ability of individuals to contribute in the period following a disaster was not only important for the community but also cathartic for individuals.

Furthermore, some of the projects run by Project Lyttelton encouraged and built the social support networks of the town which became important during the response and recovery. Many interviewees discussed the kind and caring environment of the town, and their positive relationships with neighbours and other residents. Kaniasty and Norris (1995) note that perceptions of social support such as those indicated above are often more important for supporting the community through a disaster than the actual social support that is received. These perceptions and experiences of Lyttelton as a friendly, close-knit and welcoming community have, from the interviewees' perspectives, built a good foundation for perceived and actual social support both during and after the 22 February earthquake.

The Timebank was also seen as an activity that contributed to social support by creating informal networks among people that helped individuals recognise familiar faces and feel more comfortable after the earthquakes. One interviewee described how she saw the Timebank's role after the earthquake:

> Timebanking makes ties between people, you know a lot of people, and this helps in a disaster situation. Knowing your neighbours, recognising faces on every street (Interviewee 6).

Social support by networking and introducing with people whose paths may not have crossed before increases an individual's identification with others in the community. This identification sometimes occurs immediately following a disaster but is often lost after the initial response phase (Kaniasty and Norris, 1995). However, in Lyttelton, the pre-existence of the initiative appears to have supported the connectedness that existed prior to the disaster, promoting the efficacy of the Timebank and ensuring the on-going momentum of increased social connection. Opportunities to reinforce existing social support networks and create new ones following the earthquake were also experienced through other activities such as the community garden and craft activities such as Lyttel Stitches, which were used as a places to meet and seek comfort from others.

5. Social learning and social memory in Lyttelton

The ability of a system to advance through adaptation and learning is a large part of community resilience – especially in times of disaster (Bodin *et al.*, 2006). Social learning and social memory form the essential frameworks for processes of adaptation and learning (Gunderson, 2010; Krasny and Tidball, 2009). Social memory refers to the ability of society and institutions to remember and learn lessons from previous crises or disturbances (Wilson, 2013). Social learning is held in the memory of individuals and communities and results in the production of social memories (Berkes, 2007). This process involves collaboration with multiple parties and stakeholders in the community to focus on the learning of the social entity as whole (Pahl-Wostl *et al.*, 2007).

Social learning occurs through societies and institutions "learning" as people learn (Berkes, 2007). Thus, organisations such as Project Lyttelton and the community of Lyttelton can learn collectively through their processes and activities. This can contribute to learning that arises out of previous experiences of disruption and disaster, and allows the social institution to act as a repository of social memory (Adger, 2005). Wilson (2013, p. 1) describes this through explaining that specific characteristics of a social system are "associated with life histories" and "communal memories". This process increases adaptive capacity in the community as the group becomes a source for lessons and memories from the earthquakes.

An activity led by Project Lyttelton as a result of the earthquakes that has facilitated social learning is the "Harbour Resilience Project". This project seeks to build on the experiences from the earthquakes to learn by doing – an important aspect of social learning (Berkes, 2007). The earthquakes highlighted concerns about food security, particularly due to the isolation of the town as a result of road closures. Consequently, the Harbour Resilience Project involves various initiatives based on sharing produce, building a skills base and establishing an education centre. At the time of research, the Harbour Resilience Project had successfully established an organic food co-operative in the town and a "Plenty to Share" bartering stall. The Harbour Resilience Project enables both individual and social learning by allowing individuals to come and learn new techniques and approaches to sustainable living. By doing so the project contributes to shared community action and resilience by building social networks and providing opportunities for learning as an outcome of interaction with the bio-physical environment (Krasny and Tidball, 2009).

Similarly, social memory refers to the preservation of learning that results in memories that become collective in nature (Olick and Robbins, 1998). This process is integral to resilience as it allows for lessons from disruptions to the status quo to be passed through generations and time to strengthen a community against future threats (Adger, 2005). The lessons from these events become "stored" in the collective memory of society, institutions and individuals acting as a transmitter of the past into the present (Berkes, 2007). As a grassroots community group, Project Lyttelton can potentially play a role in supporting the social memory of the earthquakes that will increase the resilience of the community to further events. It is difficult to gauge their impact on this as social memory inherently relies on a perspective of how past experiences have been remembered in the present.

However, some of Project Lyttelton's activities are potentially useful for establishing and perpetuating social memories related to the earthquakes. One example of this is a book produced by the group called *The Shaken Heart* (Evans, 2012). The book is

composed of interviews with residents across a variety of backgrounds and ages as to their experiences, memories and lessons from the earthquakes. Through creating this record, the book provides what Olick and Robbins (1998) call a general form of commemoration and tradition that provides the basis of social memories. Of particular importance to social learning are the elements of Lyttelton resident's experiences that related to their self-reliance, networks of support and the community involvement in the immediate response.

Another example of commemoration is several blankets of hand-sewn hearts which were created by people in Lyttel Stitches, a craft group that emerged on the side of the main street following the earthquakes. Images of these hearts have become a symbol for Lyttelton following the earthquakes. People integral to the project have been interviewed for television programmes including the BBC. A blanket of hearts has been featured in Te Papa (The National Museum of Aotearoa New Zealand) and one remains in Lyttelton, which one interviewee described as the town's memorial blanket.

6. Discussion

The case study of Project Lyttelton following the 2010/2011 earthquakes provides interesting insight into the behaviour of community-led disaster recovery action. This work illuminates areas of both theoretical consideration, and practical possibilities for improving community resilience to disasters. The main finding of this research is that already established community organisations can play an important role in responding to the unique needs of their community, and the broader processes of disaster response and recovery. Furthermore, the mechanism of Timebanking provides an ideal way to encourage and support community capacities in a way that supports these disaster response outcomes. Broadly, these findings reinforce the work undertaken by Vallance and Carlton (2014) in which inventories of community action related to the disaster were compiled, suggesting that groups active before the event contribute to engagement and services during a disaster. Project Lyttelton provides an excellent example of such a repository of community resilience that was able to improve the livelihoods of community members day to day as well as during a disaster.

Furthermore, research outlined by Thornley *et al.* (2015), emphasises the importance of resources, participation and engagement in Christchurch in order to build strong and engaged communities both in times of normality and disaster. This research provides a specific case study analysis of the ways that this community building can be facilitated at a grassroots level prior to a disaster event. As Project Lyttelton had in place networks of support and participation, particularly due to the "dry run" of the Darfield earthquake, their experience of enacting community resilience during the 22 February earthquake was enhanced.

From the experiences of Project Lyttelton during this response and recovery several points of recommendation can be suggested. Project Lyttelton was able to undertake their activities to the level of success they have experienced largely due to the dedication of individuals in the community. However, their success is also due to the resourcing available to them through community trusts and grants. The organisation had received ongoing financial support (although it is worth noting the significant work effort required to apply and reapply for this funding) before the earthquakes and has continued to do so post-earthquakes. As mentioned by Buckle (2006), the importance of adequate resourcing for community organisations that support preparedness and resilience capacities should not be

underestimated. Thus it is recommended that in order to encourage and facilitate community development in a manner similar to the activities of Project Lyttelton, and for the purpose of supporting community resilience; financial and social resourcing of such organisations is made a priority. However, this is recommended with caution to the importance of community organisations retaining autonomy and direction of their activities in a way that suits and adapts to the local history and context.

A danger arises when local and central governments increasingly advocate for community resilience initiatives as a way to devolve responsibility for disaster preparedness and response without adequate consideration for the resourcing needed for this to be successful. While Coles and Buckle (2004) note that one positive element of encouraging community resilience is the enhancement of disaster response within the limitations on government funding, these aspects of resilience do not emerge without support and resourcing. Peck and Tickell (2002, p. 386) note that governance structures are increasingly cutting social spending that leaves communities with "responsibility without power". If community resilience is engaged in this manner, it potentially leaves communities in a situation where they have increased responsibility with fewer resources to enact these outcomes (Cote and Nightingale, 2012). Thus, the experiences of Project Lyttelton in disaster response and recovery must be seen in a broader context of the socio-economic positioning of the community and the levels of social and financial resources available.

Moreover, through the interview data, it is apparent that Project Lyttelton was able to participate more thoroughly and smoothly in the official response to the 22 February 2011 earthquake alongside Civil Defence due to their previous experience in the Darfield earthquake in September 2010. This finding suggests the need for community groups, as well as agencies devoted to disaster response and preparedness to engage in closer relationships and networks. Further findings of this research have demonstrated the importance of social participation as an avenue to build relationships between community organisations and higher level governance institutions that allow for communities to take some level of ownership and control. This approach integrates well with the current literature on disaster response which notes the importance of moving away from the command and control approach that has focused on an intensive role of State and governance actors, relegating individuals and communities to passive roles in response and recovery (Singh-Peterson *et al.*, 2015; Prior and Eriksen, 2013). As a result, it is recommended that community resilience building activities not be seen in isolation, or as compartmentalised from broader emergency management institutions and structures.

On a final note, in the years since the original research, Project Lyttelton has maintained their ongoing community building activities through the farmers market, seasonal events and their Harbour Resilience project. Further activities have also been instigated to improve their response to future events. This has included a project in which Timebank members interviewed their neighbours on their needs and skills during a disaster, the information of which contributes to a database for disaster preparedness. The ongoing nature of community resilience work in Lyttelton reinforces the importance of the organisational approach and structure of Project Lyttelton, which has created a successful strategy for encouraging and resourcing community resilience to disaster events.

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Note

1. A Timebank is an alternative community currency which operates on the basis that everyone's time is valued equally. Trades and services are exchanged for time credits which can then be used to engage the services of other.

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About the author

Raven Marie Cretney's research approaches the social and cultural aspects of local and global issues, particularly surrounding crisis and disaster. She has written on emerging radical articulations of resilience and is working on further projects addressing the capacity for grassroots responses to environmental and social issues. Her current research for her doctorate investigates the role of community led recovery initiatives in shaping perceptions of democracy and participation in post-earthquake Christchurch in Aotearoa/New Zealand. Raven Marie Cretney can be contacted at: ravencretney@gmail.com