

Shaping urban resilience: An analysis of post-earthquake recovery in Christchurch

Mark Poskitt

University of Canterbury

Abstract

This paper asks *how is resilience shaped at the city scale, and does 'co-creation' offer a more effective approach than conventional top-down alternatives?* in the context of the post-earthquake recovery process in Christchurch since 2011. It uses documentary evidence, participatory observation and interviews to understand the approaches of two organisations: the Canterbury Earthquake Recovery Authority (CERA), and Regenerate Christchurch. For the first five years, Christchurch's recovery was primarily shaped and coordinated by the top-down authority of CERA. But, with growing concerns over the legitimacy and effectiveness of this, a fresh approach known as 'co-creation' has emerged. This approach has been mandated and championed by CERA's successor: Regenerate Christchurch; a joint crown and city council organisation tasked with engaging communities in the city. The paper concludes that top-down approaches to post-earthquake recovery persisted for too long in Christchurch, and undercut the potential of co-creation to contribute to urban resilience.

Keywords: urban resilience, co-creation, top down, Christchurch, earthquakes.

Background and context

On the 10th of September 2010 at 4.35am Christchurch was rocked by a powerful magnitude 7.1 earthquake, caused by the rupture of the Darfield fault line 40km inland. Although this event caused extreme liquefaction and land subsidence in many parts of the city ([Cubrinovski et al., 2012](#)), decimating local infrastructure and disrupting livelihoods, the timing meant that most people were in bed, and consequently, there were no casualties. But on the 22nd of February 2011 at 12:51pm, a strong aftershock of magnitude 6.3 rippled across Canterbury. Due to the proximity of this earthquake to Christchurch city, the consequences were devastating ([Stevenson et al., 2011](#)). In addition to further infrastructural damage, including the collapse of the Christchurch cathedral and the CTV building, 185 confirmed fatalities were recorded, making this event one of the deadliest disasters in New Zealand's history ([New Zealand Disasters Timeline, 2016](#)).

As a young man currently living in Christchurch, the city's ongoing recovery has immediate relevance to my everyday life, and of those I interact with. Over the past three years, I have witnessed many changes in Christchurch, including the transition from the Canterbury Earthquake Recovery Authority ([CERA](#)) to Regenerate Christchurch – two very different organisations that have played key roles in shaping post-earthquake resilience. Something that stood out most to me during this transition, was the markedly different approaches and processes utilised by each organisation. Whilst CERA was top-down, authoritative, and hierarchical, Regenerate Christchurch places a strong emphasis on 'co-creation' via community engagement, decision making, and consultation. This prompted the following question as the focus of this paper: how is resilience shaped at the city scale, and does 'co-creation' offer a more effective approach than conventional top-down alternatives?

Understanding Urban Resilience

How can a city be resilient? In answering to this question, it is helpful to recognise that cities are complex systems ([Batty, 2007](#)), comprised of numerous inputs, outputs, and dynamic internal processes. The same qualities that contribute to the resilience of a complex system then, will contribute to the resilience of a city. [Holling and Walker's](#) (2003) description of the three core components of a resilient system provide a useful framework for developing an accurate definition for “urban resilience”.

Firstly, resilience is characterised by the ability of a system to undergo or be exposed to change, yet still retain its original structure or function (Holling & Walker, 2003; [Walker et al.](#), 2002). This is not to say a resilient system does not change in response to external or internal stressors, but rather that its overall function or purpose remains uncompromised. At the city-level, this may refer to the ability of organisations and people to continue pursuing a goal, despite being exposed to different external or internal stressors. Secondly, resilience is reflected by a system's capability to effectively self-organise ([Kaufmann](#), 2013). In an urban context, this may refer to the ability of different groups and communities within a city to coordinate and organise themselves without relying on external direction. Finally, resilient systems should have the capacity to learn and adapt in response to change ([Pike et al.](#), 2010). In a city, such a characteristic may refer to the ability of different organisations and groups to dynamically incorporate feedback and learning experiences to improve and become more efficient. Consequently, a resilient system can be defined as a system that can self-organise, adapt, and maintain its overall function despite being exposed to significant change or stressors. “Urban resilience” then, refers to the extent to which a city exhibits these core characteristics of a resilient system. Figure 1 provides a visual illustration of this framework:

Framework for Understanding Urban Resilience:

Resilient characteristic	Example of characteristic at the city-scale
<p>1) Ability to undergo or be exposed to change, yet retain original function.</p>	<ul style="list-style-type: none"> • Ability of groups and communities to continue to pursue a particular goal or objective, despite being exposed to a range of internal or external stressors that may make this task more difficult.
<p>2) Ability to self-organise.</p>	<ul style="list-style-type: none"> • Ability of different groups and communities within a city to coordinate and organise themselves, without relying on external direction.
<p>3) Ability to learn and adapt in response to change.</p>	<ul style="list-style-type: none"> • Ability of groups and communities to dynamically integrate feedback and experience in order to become more efficient.

Figure. 1. Framework for understanding Urban Resilience

Co-creation and top-down in theory

Co-creation and top-down governance present two approaches towards urban resilience. A top-down approach is hierarchical and authoritative. It is a traditional way of managing urban life by implementing change down a command chain ([Maloney et al., 2000](#)). Typically, this results in a downward flow of information and ideas via a tiered command system, with central government at the top (Batty, 2007), and communities and individuals at the bottom. It is assumed that the highest levels of competency, expertise and experience in matters relevant to urban resilience exist at the top of this chain. Accordingly, community consultation (if carried out at all) is typically used as a tool to inform communities of decisions and changes, rather than a forum for two-way communication and negotiation. A top-down approach focuses on the economic needs of an urban system, whilst placing less

emphasis on the social and environmental aspects of a city. This type of decision-making is often rapid and time-efficient, as required in situations of economic stress.

Top-down governance is made easier by the wider social hierarchies present in most urban-political systems, and as such is an accurate reflection of existing urban social structures. However, determining whose opinion is the most valid on appropriate urban resilience strategies is a contentious issue, entangled in labyrinth of commercial and corporate interests, political nepotism, and complex social interactions. We may like to think that central government will make the right decisions for the right reasons, but this will not always be the case ([Server](#), 1996). Top-down management is efficient within limits, but lacks the accountability and transparency of other approaches such as co-creation, and relies on the assumed competency of a few to benefit the many.

Co-creation is in many ways the antithesis of a top-down approach to urban resilience. It reflects more broadly a way of thinking, creating, and problem solving germane to countless areas of society. It is a concept that has become increasingly popular in an array of disciplines, including marketing ([Sanders & Stappers](#), 2008) and technological development ([Kohler et al.](#), 2011). Co-creation breaks down hierarchical boundaries and traditional styles of management, and aims to encourage individuals and groups to design and create inclusively and in collaboration with one another ([Ind & Coates](#), 2013). It requires effective communication, cooperation, and commitment from all parties, including governments, business partners, the science sector, and community groups ([Regeer & Bunders](#), 2009). Co-creation is intended to be participatory ([Tanev et al.](#), 2011), rather than an elitist method of problem solving and design. Decisions are made collectively and based on the inputs of numerous actors. In contrast to top-down governance, the involvement of

local institutions and people tends to place stronger emphasis on the social and environmental components of an urban system.

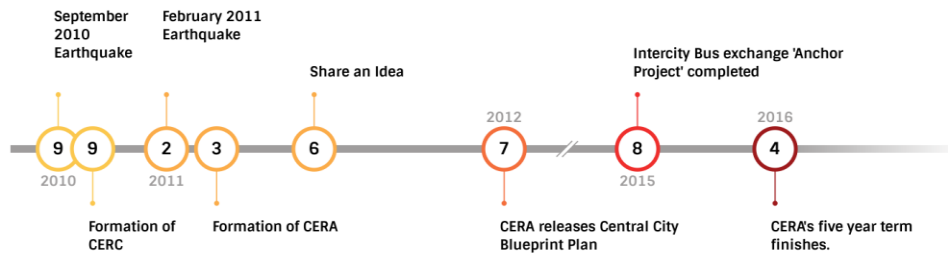
Due to its inclusive structure, co-creation is typically more democratic, transparent, and egalitarian than other traditional methods of urban management. However, this often comes at the cost of time and financial efficiency. Co-creation relies on community engagement and consultation to inform key decisions. For such consultation to be carried out thoroughly and fairly, a considerable amount of time and resource is required ([Culver & Howe, 2004](#)). Consulting *all* affected parties is a difficult task, especially those typically harder to reach such as economic, ethnic, and social minority groups ([Brackertz et al., 2005](#)). As co-creation has only recently been applied to an urban resilience context, there are many unknowns as to how best to co-create effective urban resilience solutions. How consultation is conducted, and determining how best to collate and interpret the findings of community consultation is a challenge (Culver & Howe, 2004), as is finding an appropriate balance between consultation and action. Solving these issues is crucial if co-creation is to have a useful role in resilient urban planning, and requires effective organisation, and cooperation from many sectors.

Christchurch: contrasting approaches to resilience in practice

The application of these ideas in Christchurch's ongoing recovery begins with an analysis of a 'signal event' – Share an Idea – before exploring top down and co-creation approaches to urban resilience through the case studies of two organisations: CERA; and Regenerate Christchurch. The empirical basis for this investigation is comprised of participant observation, interviews with key players, newspaper articles, and assessment of relative

legislation. Figure 2 provides a visual illustration of some key events in post-earthquake Christchurch that will be discussed.

2010-2016



2016-2017

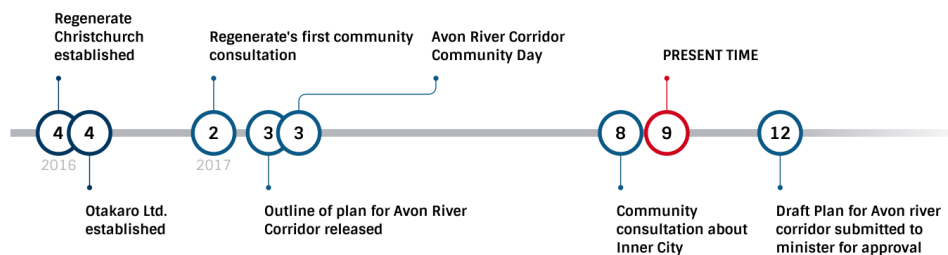


Figure 2: Christchurch post-earthquake timeline

Share an Idea

Following the September 2010 earthquake, the Canterbury Earthquake Recovery Commission (CERC), predominantly comprised of local government officials, was formed to manage the city's recovery. From 28th May – 15th June 2011, a series of public workshops were held in various locations around Christchurch, as a way of informing the city council's plan for the future city. This process of public consultation was a means through which

residents could voice their thoughts and opinions about the direction Christchurch should take in its long road to recovery. Over 105,000 ideas were collated from more than 10,000 people visiting the physical exhibition ([Greater Christchurch Group](#), 2017). Online idea submissions were also welcomed to increase the accessibility of this initiative. Despite the widespread popularity and praise gathered by Share an Idea, including internationally ([Carlton](#), 2013), the city council's plan never got off the ground. Instead, it was supplanted in 2012 by CERA's own Central Recovery Plan. Although Share an Idea undoubtedly helped to inform CERA's later plan, the government believed the results from this campaign lacked specific details and fiscal robustness, and so intervened to make changes accordingly (Greater Christchurch Group, 2017).

What is the significance of Share an Idea in terms of different approaches to resilience? Firstly, it is symbolically important, as it represents a phase change in Christchurch's recovery after the earthquakes. Prior to Share an Idea, the city's recovery process was very much grounded in the present, and aimed to facilitate and tend to Christchurch's immediate needs. This included restoring power and basic services to residents, repairing core networks, and cleaning up the most obstructive or dangerous infrastructure damage caused by the earthquakes. Share an Idea however, was the first attempt to look further than the immediate future and discern what sort of city Christchurch wished to become.

Secondly, Share an Idea gave an evanescent glimpse into an alternative approach to urban resilience. It was very much a participatory exercise that sought to engage Christchurch communities – values grounded in a co-creation approach to resilient urbanism. The importance of this is that such an approach was widely popular. It gave hope and positivity to Christchurch residents, and helped them be involved in the tangible

planning for their city's future. Why then, given the apparent success of this original co-creation initiative, did CERA not adapt this approach to urban resilience and management to better suit the obvious and changing needs of Christchurch communities? After all, resilient cities should be able to adapt in response to change.

CERA

The efforts of CERC to lead the recovery post-2010 earthquake were seen by the government as ineffectual and lacking coordination ([Mamalu-Seadon & McLean](#), 2015). Hence, after February 2011, the government took the opportunity to create a new, strongly authoritative agency. Given a wide range of legislative powers through the Canterbury Earthquake Recovery Act 2011, CERA was required to “provide strategic leadership and to coordinate activities to enable an effective, timely, and coordinated rebuilding and recovery effort in Christchurch” ([Brownlee](#), 2011, 3). One of CERA's first tasks was to land zone the entire city based on its liquefaction potential, including the identification of a red zone area along the Avon River corridor which was deemed unsuitable for urban use due to extreme land damage. CERA was also tasked with developing a blueprint plan for the rebuild of the central city area, where over half of the buildings were either destroyed or demolished.

CERA's image amongst Cantabrians is controversial. Throughout its life, it was widely criticised for its lack of effective communication, absence of public engagement, minimal transparency, and top-down decision making procedures ([Wright](#), 2016). This negative view of CERA strongly suggest that the top-down approach taken by CERA had some substantial flaws. CERA's controlling authority was supposed to speed up the earthquake recovery. For instance, CERA were required to produce the entire central city rebuild blueprint within 100 days. But in reality, it slowed things down. Of the thirteen anchor projects and precincts

produced by CERA in the 2012 Central City Recovery Plan, only two have so far been completed (one of which was completed *after* CERA's dissolution). CERA lacked transparency and did not communicate appropriate rationales for core decisions in the Christchurch rebuild. For example, many are still confused today, about the justification of CERA's biggest anchor projects: the convention centre. As one prominent player in the city, Evan Smith notes: "You need to bring communities and investment with you...unless there is some transparency and rationale given regarding decision making, this cannot happen" ([Smith](#), pers. com, 2017).

Despite these criticisms, CERA provided crucial coordination and leadership in the period of extreme instability and civil emergency following the February 2011 earthquakes – an impossible task for local government to manage alone (Greater Christchurch Group, 2017). Although such an authoritative approach was necessary in the aftermath of disaster, a key question is whether it should have evolved to adapt to changing needs and demands at different stages in the city's recovery process. Perhaps if CERA had recognised the significance of Share an Idea and begun to transition towards a more co-creation orientated approach to urban management much of the dissatisfaction surrounding the legacy of this organisation might have been avoided. But if anything, CERA's top-down approach became increasingly more pronounced over time. What started out as a small organisation of approximately 50 staff, swelled to a giant administration with over 300 staff and 150 contractors by 2014 (CERA, 2016), as CERA took more and more responsibility upon itself to coordinate, direct, manage, and carry out the entire rebuilt and recovery process on its own (Greater Christchurch Group, 2017). This was partly a product of the pressure from unrealistic public expectations of CERA ([Kerr](#), pers. com, 2017), combined with a "strong culture of problem solving and 'doing' recovery" within the organisation (Greater

Christchurch Group, 2017). As Rob Kerr, a senior figure in the Regenerate management team who has previously worked for CERA remarked, “there was an expectation that CERA were the recovery” (Kerr, pers. com, 2017).

Regenerate Christchurch

In mid-2016, CERA made way for two new organisations: Ōtākaro; and Regenerate Christchurch. Whilst Ōtākaro’s main function is to deliver the Crown-led Anchor projects outlined in CERA’s Central Christchurch Recovery Plan; Regenerate has been tasked with “facilitating the ongoing planning and regeneration of greater Christchurch”. By “regeneration” is meant “improving the environmental, economic, social, and cultural well-being” through urban renewal, restoration, and development ([Greater Christchurch Regeneration Act](#), 2016). The role of this organisation is to bring greater self-organisation to the city, and to focus and adapt processes in response to change – two core characteristics of urban resilience.

Its approach is very much grounded in values of co-creation It aims to engage local communities to jointly produce lasting urban outcomes ([Regenerate Christchurch](#), 2017a). An example of this is the Ōtākaro Avon River Corridor Community Day, held on the 8th March 2017, as a step along the way to gather community input to determine and co-create a shared vision for the Avon river corridor – an area of approximately 602 hectares of previously residential red-zone land, which was cleared of infrastructure following the 2010-2011 earthquakes due to extreme land damage ([Regenerate Christchurch](#), 2017b).

This event appeared to genuinely embrace a community engagement approach. Reminiscent of Share and Idea, there were a variety of visual stations focused on different elements of the Avon corridor. People were encouraged to place a sticky-note with their

suggestions and concerns at these stations, whilst also ranking the importance of different values relating to housing, the environment, children, recreational activities, social opportunities, and others. Key leaders of the Regenerate team, including Chief Executive Ivan Iafeta and Partnership and Engagement Manager Chris Mene, were actively walking around and conversing with residents about their hopes and ideas for the corridor. I had the chance to talk to both.

There were, however, some groups missing. I was one of only a few university aged students present; and there was an obvious underrepresentation of Maori, Pacific Islander, and Asian ethnicities. This reflects that some groups are harder to reach. Regenerate have identified this as a problem, and are taking appropriate measures to deal with it (Kerr, pers. com, 2017). Finally, on talking to Regenerate staff about their process, it became apparent that there are many unknowns regarding co-creation.

The co-creation process envisaged involved a balance between community research, community needs, contextual analysis, and technical solutions (Regenerate Christchurch, 2017a). Where exactly this balance lies and what these terms mean in practice however, was not entirely clear. Perhaps co-creation needs to be somewhat agile and elusive— able to change and adapt depending on the direction the community wants it to go. But setting some concrete boundaries within which such a process can operate is imperative, especially if Regenerate is to achieve a lasting legacy in Christchurch.

Discussion and conclusions

CERA and Regenerate Christchurch present oppositional approaches to urban resilience. Whilst the former was authoritative and top-down; the latter is grounded in values of

community engagement, cooperation, and interaction. But how have these two approaches shaped Christchurch city, and what conclusions can we draw from this?

The first point to make is that the different approaches taken by Regenerate and CERA reflect the context within which each organisation emerged. Following the disorganised attempts of the primarily locally-bodied CERC to coordinate Christchurch's recovery post September 2010 earthquake, the February 2011 earthquake provided an opportunity for the New Zealand government to establish a single authority to spearhead the immediate Christchurch recovery (Greater Christchurch Group, 2017). Due to the extensive infrastructural damage and significant Crown investment needing to be put into Christchurch post-earthquake, this approach appears prudent. But it was also necessary for the survival of the city. As Rob Kerr notes: "If the Crown didn't commit early and hard like they did, there wouldn't be a central city" (Kerr, pers. com, 2017).

The destruction wrought by the 2011 earthquake far exceeded the capacities of any local group – governmental or otherwise – to lead a coordinated recovery effort. CERA provided an answer to this need, and attempted to bring stability to an earthquake ravaged city when time pressure, financial concerns, and safety and wellbeing were paramount. When analysed in the context from which it emerged, the top-down approach taken by CERA appears not only reasonable, but almost inevitable.

Conversely, Regenerate emerged against a very different backdrop. Five years on, the needs of Christchurch residents had evolved significantly. The temporal focus had shifted from the present and immediate future, to planning for the medium-to-long term future. Most residents have greater control over their everyday lives than five years ago; the same can be said for local government and countless community groups. There is no longer the pressing need for a single, top-down authority. But due to its dominating culture, CERA

“missed opportunities to empower other, more permanent, entities to take responsibility and build capacity” (Greater Christchurch Group, 2017, pg.33). This had a disempowering impact on many groups and individuals. Consequently, when CERA’s term ended there was widespread recognition that a completely different approach was needed for the next phase of recovery.

Like CERA, the approach adopted by Regenerate is a product of the context in which it emerged, and of the changing needs of Christchurch city. A co-creation approach would have been insufficient immediately following the February earthquake to maintain the city’s structure and function (Figure.1). Similarly, a top-down approach was unsuitable in the comparatively stable Christchurch urban environment five years after this disaster. The conclusion we can draw from this is that different approaches to urban resilience have suited different stages in Christchurch’s post-earthquake journey. The effectiveness of CERA’s top-down approach dwindled over time, repressing one of the core characteristics of urban resilience: the ability to learn and adapt in response to change. Share an Idea provided evidence that a more inclusive and community orientated approach to urban resilience does work. This suggests that, retrospectively, there should have been an earlier transition to a co-creation. This would have enhanced the ability of the entire urban system of Christchurch to self-organise, thereby augmenting another core characteristic of urban resilience.

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