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Towards the enhancement of resilience in a Disaster Management context:

The contribution of the Student Volunteer Army to community reconstruction in the aftermath of the Christchurch Earthquakes of 2010 and 2011

James D. Short & Zane A. Ritchie

With regard to the major earthquakes which struck Christchurch New Zealand in 2010 and 2011, this paper discusses possible lessons that can be learned from the experiences of the volunteer group that was formed by students of the University of Canterbury in the aftermath of the earthquakes, the Student Volunteer Army. Applying the conceptualization of resilience utilised in the field of Disaster Management, it examines the contributions of the Student Volunteer Army to community reconstruction in Christchurch and suggests how such experiences may inform other spontaneous altruistic activities to assist victims of natural disasters in other geographical contexts.

Introduction

The major earthquakes which struck the city of Christchurch New Zealand in September 2010 and February 2011 caused massive damage to the city and large parts of the surrounding area. As well as tragically claiming the lives of 185 people, the earthquakes caused severe damage to thousands of commercial and residential buildings, especially in the city's architectural heart - the Commercial Business District (CBD), and across its eastern suburbs. The twin disasters caused untold physical damage to the city itself and also great economic and psychological damage to the thousands of Christchurch residents and business people who were affected by it. A massive clean-up and

subsequent reconstruction effort was launched in the city following the disasters, with multi-sector relief assistance received from across New Zealand and from a number of other countries. A group which contributed significantly in this regard was one that was formed in the aftermath of the September 2010 earthquake by students of the University of Canterbury, the Student Volunteer Army. Motivated by a desire to do whatever they could to help their fellow residents who suddenly found themselves facing severe hardship, from an initial handful of members the Student Volunteer Army expanded rapidly and at its peak following the February 2011 earthquake managed to mobilise a total of 13,000 volunteers to assist with the clean-up operation. Subsequently, the group developed into a fully-fledged university organisation which now has its own premises within the campus of the University of Canterbury.

In September 2014 the authors conducted an on the ground survey of the extent of the damage and the pace of reconstruction across the city of Christchurch. This survey revealed that on the one hand the city was continuing to face a huge challenge in terms of rebuilding or replacing large numbers of its brick and mortar assets, and that a great many Christchurch residents found themselves unable to resume their former lives due to unresolved claims for earthquake damage compensation from insurance companies. On the other hand, the survey also revealed the existence of a strong determination amongst both residents and business owners to restore their damaged city which was historically known as the 'Garden City' of New Zealand to its former glory, and also that the disasters of 2010 and 2011 - and in particular the latter, had brought out a strong sense of community companionship and cooperation which was enabling people to come to terms with and gradually overcome their serious difficulties. An important manifestation of an outpouring of altruistic community spirit that emerged in Christchurch during this period was the formation and activities of the Student Volunteer Army (Ritchie and Short, 2015)⁽¹⁾.

In order to examine this phenomenon in more depth, the authors conducted supplementary on the ground investigations in Christchurch in August 2015 and February 2016⁽²⁾, the findings of which are presented in this paper. In terms of theoretical approach, it is held that the conceptualization of **resilience** utilised within the field of Disaster Management represents an appropriate framework through which phenomena of this nature can be analysed; a detailed explanation of this contention is provided below. In the subsequent sections the discussion addresses the following topics:

1 . The theoretical framework of resilience applied in this paper and why it is held to be appropriate in this case. 2 . The formation of the Student Volunteer Army in September 2010 and its activities during the period 2010–2011. 3 . The lessons learned from this experience and how this has affected the development and current activities of the organisation⁽³⁾. 4 . The ways by which the experience of the Student Volunteer Army can reflect upon and potentially inform efforts to promote resilience in other post-natural disaster community reconstruction contexts.

Theoretical background:

1 . Multi-disciplinary applications of the concept of resilience

During the last two decades, the concept of resilience has been widely utilised across a number of different fields. The utility of a concept which in essence describes the abili-

(1) Ritchie, Z. & Short, J. (2015), *Challenges to community resilience in a post-natural disaster context: Observations and reflections on the Christchurch earthquakes of 2010 and 2011*, 立教大学コミュニティ福祉学部紀要 第17号 ;

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(2) The August 2015 investigation was conducted solely by Ritchie.

(3) The discussion in this section is drawn in particular from interviews with the founder of the Student Volunteer Army Mr. Sam Johnson, and its current President, Mr. Alex Cheesebrough.

ty of something to recover its former properties after it has been subjected to stress is discernible in a wide variety of discourses⁽⁴⁾. From Engineering and Material Science to Psychology, Ecology, Humanitarian and Development Assistance and Disaster Management amongst other academic and practical disciplines, the concept of resilience has been utilised to describe the properties of greatly differing phenomena. Whilst on the one hand this demonstrates a degree of intrinsic value due to the multi-applicability of the concept, it is also possible to identify weakness for precisely the same reason: ergo, that the concept's core meaning can be obscured due to overuse or through contemporaneous use across different disciplines to describe quite different phenomena. Short (2015) addresses the dichotomy that exists with respect to the conceptual applications of resilience and argues that no all-encompassing definition of resilience exists or is in fact even desirable. He contends, however, that the concept does possess discernible value when it is considered within specific fields and not across several different fields which have little in common with each other⁽⁵⁾.

With regard to the topic of concern in this paper, it is held that the conceptualization of resilience utilised within the field of Disaster Management is highly relevant to discussions relating to the reconstruction of Christchurch in the aftermath of the 2010 and 2011 earthquakes, and in particular to the actions of the Student Volunteer Army (hereafter frequently referred to as the SVA) which contributed significantly to the post-disaster clean-up effort.

(4) Martin-Breen, P., & Marty Anderies, J. (2011). Resilience: A Literature Review. The Bellagio Initiative - The Future of Philanthropy and Development in the Pursuit of Human Wellbeing, Background Paper.

(5) Short, J. (2015). Towards the enhancement of resilience in diverse communities under threat: A synthesis of the multi-disciplinary conceptual conceptualizations of resilience and its applicability in three distinct and contrasting cases. *Toyo University Journal of Law*, Volume 59, No. 1, 77–111.

2. Resilience as conceptualized within the field of Disaster Management

It is an unfortunate fact that since the turn of the millennium the world has witnessed a number of large-scale natural disasters which have caused enormous damage to homes and livelihoods and tragically taken thousands of lives, highly notable of which was the Indian Ocean tsunami of 2004. In the aftermath of this event, governments and international organisations endeavoured to pool their knowledge and experience in order to agree upon and subsequently enact a series of policies and protocols which could help to reduce the potentially catastrophic effects of such disasters, and also promote the development of the national and local level capacities required to restore essential services and functions to affected regions and communities in the event that a disaster strikes. The United Nations agency tasked with coordinating international responses designed to mitigate the negative effects of natural disasters around the world is the United Nations Office for Disaster Risk Reduction (UNISDR). A key concept which guides both the strategic thinking and practice of this agency is that of the promotion of **resilience**, both in terms of improving preparedness before a disaster occurs, minimising injuries and deaths while it is actually occurring and facilitating recovery and reconstruction in its aftermath. In its explanatory literature UNISDR defines resilience in the following manner (emphasis added): “*The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.* Resilience means the ability to “resile from” or “spring back from” a shock. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need.”⁽⁶⁾ The definition of resilience promulgated by UNISDR provides the theoretical grounding for the discussion in this paper.

(6) The United Nations Office for Disaster Risk Reduction, Terminology (n.d.) retrieved from: <https://www.unisdr.org/we/inform/terminology>

3. Applying the UNISDR conceptualization of resilience to the case of the Student Volunteer Army in Christchurch

Despite the fact that New Zealand lies in a region of high geological activity within the Pacific Ring of Fire, is home to several active volcanoes, and experiences a large number of earthquakes every year, in the post-Second World War period the scale of damage caused by particularly the second of the Christchurch earthquakes on February 22nd 2011 proved to be unprecedented⁽⁷⁾. As a consequence, in the immediate aftermath of the disaster the emergency response capacities within the city were quickly overwhelmed; this necessitated a rapid influx of specialised personnel and emergency assistance from across the country and from overseas. In the chaotic conditions following the initial quake of September 2010, the University of Canterbury students who formed the initial core group of the Student Volunteer Army⁽⁸⁾ appreciated an urgent social need on the part of a great number of their fellow residents, and were thus motivated to act in order to assist them in any way possible.

With regard to the UNISDR definition of resilience quoted above, and in particular the phrase referring to the ability to “*absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner*”, due to the fact that the scale of the earthquake damage had demonstrably exceeded Christchurch’s emergency response capacities, the core members of the SVA formed themselves into a group and began working to tackle the enormous clean-up challenges facing the city. In so doing it can be argued that in this post-natural disaster context the group was acting to promote the resilience of Christchurch residents through contributing towards community reconstruction.

(7) See the discussion below and Ritchie & Short (2015), op. cit.

(8) See note 16 below.

4. Frameworks of resilience analysis 1: applications to specific phenomena

Within the various different fields that the concept of resilience is utilised, in both theoretical and practical terms it is applied to three specific types of phenomena: i) physical materials or objects; ii) complex, interacting systems; and iii) individual or groups of living organisms. A detailed explanation of these frameworks of resilience analysis is provided in Short (2015)⁽⁹⁾, but to summarise here: the first framework, referred to as **Engineering Resilience** and commonly applied in the fields of Engineering and Material Science, examines the physical properties of materials or objects primarily for the purpose of ascertaining their suitability for building construction. The second framework referred to as **Systems Resilience**, which is applied in fields such as Economics and Humanitarian and Development Assistance, examines complex, interacting systems that do not contain living actors, such as a nation's power grid or water treatment facilities. This analysis is utilised to ascertain how such systems may respond to shocks caused by extreme weather events or accidents, and whether back-up facilities are in place and possess sufficient capacity to fulfil their relevant functions. The third framework referred to as **Complex Adaptive Systems Resilience**, which in many ways represents an extension of Systems Resilience, also examines complex, interacting systems, but focuses on those which contain living organisms; this framework is applied in fields such as Ecology, Psychology and Disaster Management. The primary difference between the latter two frameworks is that living organisms possess the innate ability to react to changes that take place in their surrounding environments and as a consequence adapt accordingly⁽¹⁰⁾.

(9) Short (2015), op. cit.

(10) Adaptations that take place in individual or groups of organisms as a result of changes that occur in the surrounding environment can produce both positive and negative effects for the organism or organisms in question.

As may be apparent, the framework of resilience analysis held to be most relevant to the case of the activities of the Student Volunteer Army in the aftermath of the Christchurch earthquakes is that of Complex Adaptive Systems Resilience. In this sense it is held that this framework can be utilised to analyse the phenomena in question in two distinct ways: firstly, with regard to the individual members of the SVA, in the aftermath of the earthquakes a question is posed with respect to how they personally and then as a rapidly coalescing group responded - that is to say *adapted* - to the devastating changes that had taken place within their city. As the discussion below will illustrate, the members did not fall victim to a sense of shock and powerlessness in the face of the massive damage caused by this major natural disaster, but were on the contrary motivated by a strong desire to help their fellow residents who had been affected by it in any way possible, and thence swiftly acted upon that desire. The second application of this framework concerns how the specific activities of the SVA were able to assist Christchurch residents in coming to terms with the multi-level disaster that surrounded them. In other words, and once more applying the aforementioned phrase from the UNISDR definition of resilience, how did the SVA's activities assist people across the city to "absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner"? This question will similarly be addressed in the discussion below.

5. Frameworks of resilience analysis 2 : temporal perspectives

In addition to the framework of resilience analysis held to be most appropriate to examine the case of the SVA's activities in Christchurch, a further important dimension exists in this discussion which focuses on temporal perspective. This dimension refers to the specific time period in which the resilience of particular phenomena are analysed. In the field of Disaster Management three temporal perspectives form the main focus of analysis: these are the periods of **prior to**, **during** and **following** a natural disaster. The periods correspond to specific times when actions can be taken by both na-

tional and local governments, the business community and individual people in order to lessen the damaging effects of natural disasters. In the terminology utilised by UNISDR these periods are referred to as periods of **preparedness**, **response** and **recovery**⁽¹¹⁾. Within a particular geographical context, the preparedness period concerns issues such as the application of appropriate building standards, the robustness of transportation and communication networks, the capacities of emergency services, and the quantity and location of emergency relief supplies. The response period refers to the ways by which people's lives and possessions can be most effectively protected when a disaster strikes; it concerns issues such as the existence and effectiveness of evacuation plans, the location and capacity of emergency shelters, and the existence of essential back-up resources such as electricity generators, batteries, bottled water and non-perishable food. The recovery period refers to the capacities and resources which can be brought to bear by a variety of actors following a disaster in order to aid people in the task of getting their lives back to normal as efficaciously as possible. In the immediate aftermath of a disaster this concerns issues such as the restoration of communication and transport networks, the provision of emergency medical assistance, and the reconnection of water and electricity supplies. At a subsequent stage of the recovery process priorities commonly shift to issues such as the provision of sufficient material resources for the rebuilding of homes, businesses and essential community assets such as hospitals and schools⁽¹²⁾.

When considering the activities of individual actors in the context of a natural disaster in terms of the three temporal perspectives, the matrix below can serve as a tool to identify which time period or periods is/are the most relevant to a particular discussion; subsequently, it can focus attention on the specific activities which took place during

(11) The United Nations Office for Disaster Risk Reduction, Terminology (n.d.) retrieved from: <https://www.unisdr.org/we/inform/terminology> op.cit.

(12) <https://www.unisdr.org/we/coordinate/sendai-framework>

that period in order to assess relative levels of effectiveness.

Figure 1 : An actor's response in a natural disaster - application of temporal perspectives

	Temporal perspective		
	Preparedness (prior to)	Response (during)	Recovery (following)
Activities of relevant actor in a natural disaster context (e.g. police, fire brigade, volunteer organisation etc.)			

In the example matrix above if the actor in question were, for example, the Christchurch fire brigade, it goes without saying that their activities in all three temporal perspectives were extremely relevant to the conditions extant in the city prior to, during and after the earthquakes of 2010 and 2011. However, with regard to the activities of the Student Volunteer Army prior to the September 2010 earthquake, due to the fact that the group had yet to come into existence, the matrix would take the following form:

Figure 2 : Activities of the SVA in the Christchurch earthquake of September 4th 2010

	Temporal perspective		
	Preparedness (prior to)	Response (during)	Recovery (following)
Activities of the SVA in the Christchurch earthquake of September 4 th 2010	Group not yet formed	Group not yet formed	Group quickly formed and participated in the recovery effort in a variety of ways

Furthermore, with regard to the case of the SVA's activities prior to, during and follow-

ing the February 22nd earthquake, the matrix would take the following form:

Figure 3: Activities of the SVA in the Christchurch earthquake of February 22nd 2011

	Temporal perspective		
	Preparedness (prior to)	Response (during)	Recovery (following)
Activities of the SVA in the Christchurch earthquake of February 22 nd 2011	Various structures and action plans already in place based on experience following September 2010 earthquake	Action plans put into effect to facilitate a large-scale response to massive city-wide recovery challenges	Mass mobilisation of students to participate in city-wide clean-up effort. Strengthening of group structures vis-a-vis the University of Canterbury and wider community

It is held that the activities of the Student Volunteer Army made a highly significant contribution to the clean-up efforts that took place in Christchurch following both the 2010 and 2011 earthquakes. The following discussion will elucidate the sequence of events that led to this result and the motivations of the people concerned.

6. The beginnings of the Student Volunteer Army

The temporal perspective of principal interest with regard to the events which caused the SVA to come into existence in the first place in September 2010 is the Recovery cell from the Figure 2 matrix above. In an interview and subsequent documentation supplied to Ritchie in August 2015, the founder of the organisation Mr. Sam Johnson described the process.

Immediately following the 7.1 magnitude earthquake that occurred in the town of Darfield 40 kilometres west of Christchurch in the early morning of September 4th 2010,

Johnson, who was at the time a student at the University of Canterbury, came to the realisation that there would almost certainly be a great need for volunteers to assist with what would likely be a major clean-up challenge across the city. At the time he was not in possession of any formal training in civil defence practice or other relevant procedures relating to essential activities in the aftermath of a major natural disaster, and therefore thought that being able to volunteer to assist the great number of Christchurch residents affected by the earthquake in and around their own homes would likely be the most practical and effective way of contributing to the clean-up effort. In other words, he felt a strong desire to 'do something positive to help' and thought that volunteering his time and energy would be the best means of achieving this⁽¹³⁾. Accordingly, on the morning of September 4th 2010 he telephoned an emergency call centre in the city and registered his willingness to volunteer, as did hundreds of other people. However, after waiting in a queue of callers for a considerable time, he learned that neither the Ministry of Civil Defence nor the Christchurch City Council had any capacity to coordinate offers of voluntary assistance from citizens in and around the city.

At that juncture Johnson realised that if he wished to make a meaningful contribution to the clean-up effort in his position as a university student, it would require the creation of a new grassroots organisation which could take it upon itself to facilitate its own way of contributing. He held the conviction that volunteering represented an important means through which people could contribute towards their own community, and was also a valuable and active means of spending available leisure time; in effect, volunteering represented a good way to get to know new people at the same time as contributing towards developing a stronger community. Moreover, at a time when a large number of Christchurch residents were likely experiencing considerable stress and anxiety in the aftermath of the earthquake, volunteering represented a way through

(13) See the quote from the Christchurch newspaper *The Press* reproduced in section 7 below, (also note 15).

which ordinary people — that is to say people who were not involved with the emergency or medical services - could make a meaningful contribution during the immediate response period.

Later in the day on September 4th Johnson was invited to three after-earthquake events which had been hastily organised in order to lift people's spirits. However, following an encounter with a man who was printing T-shirts which bore the slogan: "I survived the Christchurch Earthquake", he came to the conclusion that university students such as himself could "probably do better than that." As a consequence, later the same evening he created a Facebook page which could serve as a platform where people could find necessary information about how to volunteer within Christchurch. In his opinion, Facebook represented the most appropriate platform through which a volunteer organisation could be established due to the fact that since its creation the social media site had in many ways revolutionised the way that young people connect with one another. He created and then publicised an event on Facebook named the Student Volunteer Base for Earthquake Clean-up and added 200 of his own friends to it; he added to this web event the request that his own friends should also invite their other friends to join it and so on. From this small-scale initiative the idea for a mass recruitment of student volunteers from across the whole of the University of Canterbury to assist with the immediate response and aftermath of the disaster came about.

With reference to the Recovery cell of Figure 2 above, Johnson's actions on and after September 4th 2010 represented an ad hoc personal response to a major natural disaster which over a relatively short period of time expanded into a major volunteer recovery effort. By means of a single initial appeal for volunteers sent out via Facebook, during the weeks that followed Johnson succeeded in assembling large teams of students from the University of Canterbury to assist with the clean-up effort. In total, 3300 students pooled their individual skills and desire to assist and were able to provide safe

and organised volunteer placement, transport, food, and other support to many of the communities within Christchurch which were in urgent need of it.

The earthquake had not only damaged a large number of buildings but had also caused widespread liquefaction across the city which left roads blocked and many homes and businesses inundated with mud and silt. Initially, the efforts of the student volunteer teams focused on areas of the city which were regarded by the emergency services as of low risk during the immediate response period⁽¹⁴⁾, and as a result they were able to clear over 65,000 tonnes of silt caused by the liquefaction which occurred in many parts of suburban Christchurch.

It is held that there are two key reasons why Johnson achieved success in recruiting a large number of student volunteers in the immediate aftermath of September 4th 2010. The first of these relates to location: since the University of Canterbury is located close to the centre of Christchurch, it is likely that its population of students had an understandable interest in assisting with the post-disaster clean-up in the city where they were living. The second reason relates to timing: at the time that the earthquake struck the University had just come to the end of a three week break, and therefore many students were at something of a loose end since it was likely that their classes would be unable to resume as usual. Therefore Johnson (perhaps somewhat fortuitously) was able to quickly identify a pool of young people who were in some sense waiting to receive the impetus and direction required to organise a meaningful response to the

(14) *Low-risk areas* were defined as areas where little hazardous structural damage had occurred and would therefore likely not cause serious health or safety concerns for non-expert volunteer clean-up teams. Thus much of the clean-up work carried out by the student volunteers in the days and weeks following September 4th 2010 entailed "digging out" silt from properties and streets caused by liquefaction. Much of this activity focused on the outlying suburbs of the city, for example in the Halswell district. Regarding this, in the interview with Ritchie, Johnson recalled telephoning the city councillor Bob Shearing who suggested that the student teams go and help individual city residents "where they could".

earthquake.

This was the overall situation with regard to the activities of the large numbers of student volunteers who came together in the aftermath of the September 2010 earthquake⁽¹⁵⁾. However, the worst was yet to come for the citizens of Christchurch as another major quake was imminent, and on this occasion in terms of location it occurred far closer to the centre of the city and was to prove quite deadly. Consequently, as the major disaster of the February 22nd 2011 earthquake and its aftermath would prove, the response thus required of the University of Canterbury students needed to be more efficient, more structured and on a much larger scale. Referring to the Figure 3 matrix above, the following discussion relates to all three of the temporal perspectives of this matrix, but in particular to the Response and Recovery cells.

7. The activities of the Student Volunteer Army following the earthquake of February 22nd 2011

Recounting the situation in Christchurch during the days that followed the February 2011 earthquake, a journalist for the city's daily broadsheet newspaper The Press described the scene in the following manner:

The CBD [Central Business District] belonged to the authorities, but in the suburbs people set to work. An army of students, hundreds strong, marched into the east of the city and attacked the silt with shovels and barrows and strong, young limbs. Famers poured into town with front-end loaders. Money poured in from the rest of New Zealand. There were innumerable acts of selflessness and generosity. People praised the Canterbury spirit, the Kiwi resilience. It was understandable self-flattery. People just did what people everywhere do in a crisis. In some ways it was easier to be in the thick of it than to be far away. You were able to do something⁽¹⁶⁾.

(15) It is important to note at this point that the volunteer groups had yet to take on the moniker of the Student Volunteer Army.

The second devastating 6.3 magnitude earthquake which occurred on February 22nd 2011 (which was subsequently ascertained to have been an aftershock of the previous year's Darfield earthquake) caused much greater damage and destruction this time to the central city, and caused hundreds of buildings across a wide area to become uninhabitable. In response to this considerably more severe post-earthquake scenario, with the basic structure of the student volunteer organisation already established via social media, Johnson and the people who made up his core team⁽¹⁷⁾ took the decision to register a new student club at the University of Canterbury called the "Student Volunteer Army" and created a new site on Facebook. At a hastily organised rally of about 150 people held at an easily accessible meeting point in the city, Johnson encouraged the members of this new club to "be safe, clear the silt and have fun"; these young people then began work to clear nearby streets of the great amounts of silt and mud that had been caused by liquefaction. However, as the SVA members began clearing the roads in nearby areas, due to the fact that they were limited to communicating with each other via word-of-mouth or through Facebook and the organisation did not possess the resources to manage efforts on a suddenly much larger scale, Johnson realised that the SVA was going to require a far more formalised structure. As a consequence, on the same day that work began, he began to feel somewhat despondent since many volunteers stopped working and went home before much had been achieved due to miscommunication and the fact that the new organisation did not have the means to feed them. Additionally, considering the fact that the volunteers didn't possess either specialist skills or equipment, it soon became apparent that the SVA's focus should be confined to the generally non-hazardous work of clearing silt and wreckage from private homes, and also that a significant priority for the organisation itself would be to keep its mem-

(16) Bennett, J., in *The Press* (2011), Earthquake Christchurch, New Zealand 22 February 2011. Random House publishing, p. 7.

(17) The core team consisted of six members (who were at the time all University of Canterbury students): Sam Johnson, Jade Rutherford, Gina Scandrett, Chris Duncan, Tom Young and Sam Gifford.

bers engaged and fed.

Johnson and his team realised that motivation and enthusiasm represented crucial aspects of the volunteering experience and that these needed to be safeguarded for the members of the SVA. It became vital therefore to free students as much as possible from unnecessary bureaucracy, and also to keep their activities separate from those being carried out by other actors such as the emergency services, local politicians, councillors, civil servants and the military who were all involved in the clean-up effort in a variety of ways. Subsequently, following a series of meetings with city officials and with personal support received from the mayor, the activities of the SVA were granted official approval from other key actors in Christchurch. As a consequence, Johnson and his core team took control of the organisation's logistics and thereafter worked in cooperation with civil defence leaders; additionally, they were successful in securing a level of funding to support their activities⁽¹⁸⁾.

In terms of the logistical management of the SVA, the organisation's principal focus was to ensure maximum efficiency of operations in order to maintain volunteer enthusiasm. One means by which this was achieved was through an innovative use of technology. Since students were reluctant to sign into designated work sites around the city using the traditional method of pen and paper, the SVA arranged the provision of laptop computers and staff members to input data in order to register students at those locations. This system was later expanded to work in conjunction with the city authorities and thereby served to swiftly direct volunteers to specific locations where assistance

(18) The SVA received financial assistance from the University of Canterbury, the Ministry of Youth Development, private enterprise support and from donations which were sent from all over the country. Various supplies including wheel-barrows, home baking sets, foodstuffs and fuel vouchers were received from many sources. Johnson stressed that many business owners were willing to contribute whatever they could to support the activities of the SVA.

was required by means of multi-e-mail address text messaging. These text messages communicated information in real time about which streets needed to be cleared and where lunch would be provided on a particular day. The SVA's core team then began to plan how to facilitate an even larger mass-student response, and on this occasion received significant support from the University of Canterbury Student Association as well as several agencies within the city. In terms of the organisation's personnel structure, a core team of 15 individuals plus a wider administration of around 70 people managed the three core operations in which the SVA was involved. The individual members were organised into groups of decreasing size which were called **battalions**, **squadrons** and **street teams**.

Mass deployments of volunteers represented the main focus of the SVA's activities which saw up to 1000 volunteers at a time depart from an assembly point using chartered buses in order to provide essential supplies of food and water to thousands of affected citizens across Christchurch. **Squadrons** were tasked with responding to specific requests for assistance which were received from people via the SVA website, SVA call centre and newly established partnerships with the Ministry of Civil Defence and local councils. Groups of students were also dispatched to various locations by car and **street teams** oversaw volunteer engagement activities involving people from a number of organisations including multiple government departments, Civil Defence and the Christchurch City Council. The central objective of this strategy was to increase the efficiency of the service provision being carried out by a variety of agencies. In addition to the task of clearing away mud and silt, SVA members themselves were involved in a wide range of other relief activities such as distributing food, water, chemical toilets and information pamphlets, laying sandbags, entering the personal data of affected residents into disaster relief databases and manning call centres.

One of the principal challenges that arose during this period was identifying the specif-

ic areas or tasks where volunteers were most needed and prioritizing the overall work load. Johnson described how through cooperation with a third party the SVA developed a mobile information management system whereby Christchurch residents could register their particular needs via a toll-free telephone number, text message or website. These tasks were then prioritized by the staff at the SVA call centre and groups of volunteers were dispatched accordingly. By means of delegating team leaders to oversee the small crews sent to various sites, through cooperation with the Federated Farmers of Canterbury (a group which was to become known as the 'Farmy Army')⁽¹⁹⁾, in the weeks and months following the February 22nd 2011 earthquake the SVA assisted in clearing over 360, 000 tonnes of silt from the streets and homes of Christchurch, while collectively amassing a total of 80, 000 individual volunteer work hours. The relaunched Facebook page ultimately gained over 26, 000 followers and served as the main platform through which the assembly and coordination of volunteers was managed across Christchurch during the remainder of 2011.

While the SVA's activities principally focused on direct, hands-on activities such as the removal of silt or the distribution of essential supplies to residents, Johnson emphasized how interpersonal bonds were formed between the student volunteers and Christchurch residents, especially those who lived alone and the elderly, as a result of

(19) Formed as a counterpart to the SVA, the Farmy Army consisted of a large number of farmers from across Canterbury whose resources, machinery and know-how were pooled together by the Federated Farmers of New Zealand in order to help the city of Christchurch in the aftermath of the 2011 earthquake. Some of the activities undertaken by this group included the distribution of much needed supplies to the residents of affected areas as well as the removal of silt using heavy machinery. Currently, in the same manner as the SVA, the organisation remains in existence and offers assistance to people who continue to find themselves in need in the form of "skilled farmers, equipment and operators, organisation, communications, interfacing with authorities, cups of tea and a friendly ear." Information relating to the Farmy Army can be found at the following websites:

<http://www.fedfarm.org.nz/services/The-Farmy-Army.asp>;

http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10709207;

this experience. These activities played an important role in establishing links between communities within the city which normally had only sporadic contact with each other. It is held that over and above the significant contribution that the members of the SVA made towards the post-earthquake clean-up in Christchurch in terms of the aforementioned activities, the formation of these interpersonal bonds represented an additional important means through which the organisation contributed towards the overall recovery effort that took place in the city. Johnson was of the opinion that these friendly, morale-boosting human contacts aided many people in coming to terms with the consequences of the disaster and therefore likely had a highly beneficial effect on their emotional state, especially considering that the city continued to suffer numerous aftershocks during the days and weeks following the February event.

Therefore with regard to the framework of resilience analysis described in section 4 above which is being applied in this case (that of Complex Adaptive Systems Resilience) , and in line with the UNISDR definition of the concept, the authors are of the firm opinion that the activities of the SVA on both a 'hard' and a 'soft' level⁽²⁰⁾ contributed significantly towards community resilience in Christchurch by means of aiding the city's many affected residents to '*absorb, accommodate to and recover from the effects of the hazard* [that they experienced] *in a timely and efficient manner*'.

8 . The Student Volunteer Army today

At present, the SVA is in possession of its own headquarters on a street located adjacent to the main campus of the University of Canterbury and is recognised as a permanent society which coordinates large scale volunteering activities on behalf of the whole university. On these premises in February 2016 Ritchie and Short conducted an

(20) 'Hard' level meaning physical activities such as the clearing away of silt and wreckage and the distribution of supplies; 'soft' level activities meaning the forming of interpersonal bonds between the SVA members and Christchurch residents affected by the disasters.

interview with the current president of the organisation, Mr. Alex Cheesebrough, a Christchurch native who has been involved with the SVA for three years. In the interview Cheesebrough described how the mission statement of the organisation has evolved since the disasters of 2010 and 2011 in order to make service a part of the student lifestyle, and to inspire students to be the change in their own community. The organisation has an executive branch of 22 members each of whom has a specific role; the titles of the members of this executive are as follows: President, Vice President, Treasurer, Logistics, Events Managers, Webmaster, Academic Coordinators, In-school Mentors, Marketing Managers and Platoon Leaders.

Cheesebrough intimated that while the main focus of the SVA's activities remains predominantly within the Christchurch context regarding the provision of assistance in the event of future earthquakes or other natural disasters, the organisation has also branched out into the field of general volunteering, carrying out a variety of missions and larger projects where needs arise. He explained that the SVA frequently receives enquiries from members of the broader Christchurch community regarding a range of projects that it could become involved with since the organisation is now recognized across the city as a valued partner to whom groups and individuals can call upon when they require assistance from volunteers. He stressed that while much of this activity remains closely related to the ongoing effects of the earthquakes five years on, much is also unrelated, with the assistance of the SVA being called upon to assist with a number of new projects.

At present the SVA has a standing membership of 1500 people of whom around 600 are core members. If required, Cheesebrough predicts that this army of volunteers can swiftly respond to meet the challenge of whatever volunteer work or projects they may be called upon to participate in since the organisation now possesses both the necessary resources and relevant know-how to facilitate this. Furthermore, due to further advanc-

es in technology, the process of assembling and dispatching able volunteers has become more efficient since the SVA has recently developed its own smartphone app which all members can access in order to respond quickly to whatever challenges are presented to them. Through this network of standing volunteers, Cheesebrough expressed confidence that in the case of another large-scale disaster, since the core response mechanism is in place, the SVA will be able to rely on an even larger volunteer turnout simply due to the nature of its redesigned social networking system. In the case that a call is sent out to the 1500 regular members requesting that each person contact a friend who can also assist, then he believes that a very large response can be expected. The SVA is also “on call” with Civil Defence, which means that the organisation is on permanent standby should Christchurch residents require assistance in a variety of emergencies. In such a scenario, people can either contact the organisation directly via its call centre or social media, or alternatively through the Ministry of Civil Defence which will in turn put those in need in direct contact with available student volunteers.

9. Lessons learned from the experience of the SVA

The damage caused to the city of Christchurch by the twin earthquakes of 2010 and 2011 was unprecedented in the post Second World War period in New Zealand, with the consequences, both economically and socially, still far reaching up to the present day. A variety of actors and agencies contributed to the massive clean-up effort which took place across the city, of which the Student Volunteer Army of the University of Canterbury made a highly significant contribution. It is held that there are lessons that can be learned from the experience of the SVA which could be of potential benefit in future disaster management scenarios in other geographical contexts.

Especially during the initial stage, the activities of the SVA represented an entirely ad hoc response to the two disasters: they were initiated by an individual who perceived volunteering as a valuable means of both giving back to the community, and which

could provide a way to get to know new people at the same time as helping build stronger, meaningful relations with people from various walks of life across the city. At a time of severe stress and anxiety which the city's residents were experiencing in the aftermath of the two earthquakes, volunteering represented a way through which ordinary people could make beneficial contributions to the massive clean-up effort⁽²¹⁾. Through cooperating with the staff of various agencies (both public and private) in areas which were designated as low-risk where it was deemed there was little danger from buildings that had sustained structural damage, the volunteers dedicated thousands of hours to clear silt and mud from streets and properties and distribute essential supplies, thus contributing significantly to the 'hard', physical aspect of the recovery process. Furthermore, by means of their personal interactions with affected residents whom they assisted and in many cases befriended in locations across the city, on the 'soft' side they also facilitated improvements in people's morale and emotional condition. Therefore it is held that cumulatively both their hard and soft activities had a tangibly positive effect on the overall recovery process and thereby contributed towards the community resilience of the people of Christchurch.

With regard to the SVA's current activities, these remain predominantly focused on the Christchurch context regarding the provision of assistance in the event of future crisis. The organisation has become involved in the field of general volunteering, ensuring that it is in a strong position to respond to future calls for assistance in a swift and effective manner. Consequently, it can be conceived that the experiences of the SVA following the Christchurch earthquakes in many respects represent something of a blue-

(21) It should be noted that while Sam Johnson and his colleagues in the SVA achieved considerable success with their activities in Christchurch during 2010 and 2011, on the strength of this, following the massive earthquake and tsunami that struck Tohoku, Japan in March 2011, Johnson sought to instigate a similar volunteer initiative in partnership with university students in Japan. However, due to a number of factors this initiative did not prove to be as successful. The reasons for this lack of success are beyond the scope of the current paper, but clearly warrant future investigation.

print for spontaneous, altruistic activity in a post-disaster scenario. It is therefore held that in future post-natural disaster contexts it would be highly beneficial for senior decision makers to permit and support grassroots, ad hoc responses which have the potential to contribute meaningfully towards a post-disaster clean-up and recovery effort in a similar manner to that achieved by the Student Volunteer Army of the University of Canterbury.

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