

Haiti and Christchurch Earthquakes

Viewed through a resilience lens

A comparative case study

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Attestation of Authorship

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any degree or diploma of a university or other institution of higher learning”.

Mark Mitchelson, 11/11/2011

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Romans 8:28

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Abstract

Two powerful earthquakes of similar magnitude struck the Canterbury region of New Zealand as well as the Caribbean nation of Haiti within the space of a few months. Indeed, the experts maintain that the quake felt within Christchurch on September 4th, 2010 was a ‘mirror image’ of the Haitian quake of January 12th, 2010. However, still recovering from the impacts of the initial damage, a second quake struck Christchurch on February 22nd, 2011 albeit with a markedly different outcome than the first. Although both ‘geophysical agents’ were located near major population centres, a point of departure between the Haitian and Christchurch earthquakes is the differential outcome experienced by the impacted regions. Whilst the overall impact within Christchurch could be described as ‘extensive’, the impact within Haiti has been labeled as ‘catastrophic’.

This comparative case study contrasted the similarities and differences between these two disaster-affected regions. At a general level, this study attempts to provide insight as to how a comparable disaster agent can produce such divergent outcomes. By utilizing a ‘resilience lens’, it analyzes what factors affect the ‘bouncing back’ process within Haiti and Christchurch. That is, were these factors generated by the disaster agent, as a result of processes in existence before the earthquakes or both and to what extent? In order to guide the categories of data collection, the ‘SEBN model’ utilized by the Ministry of Civil Defence (MCDEM) within New Zealand, was applied. The results of this study indicate that whilst ‘traditional’ resilience is evidenced by daily living within Haiti, the overwhelming levels of vulnerability, coupled with ineffective governance, insecure land tenure as well as a lack of overall resources greatly affect a ‘bouncing back’. For Christchurch, the positive results of a proactive approach (such as emergency preparedness, stringent building codes, community education) are evidenced in relation to the forces generated by the earthquake. However, Christchurch is subject to issues on a different level to Haiti which affect its potential to bounce back. Chief amongst these are the constant after-shocks; land acquisition, psycho-social and business continuity issues.

Chapter One: Introduction

This chapter provides a brief overview to the earthquakes within Haiti and Christchurch. The focus then shifts to the central concepts that inform the broader field of knowledge within the disaster discourse. International disaster trends are traced, with the differences between Less Developed Countries (LDC) and More Developed Countries (MDC) highlighted. It then ‘tackles’ the much debated question as to “What is a disaster?” and closely-related to it, the ‘nature’ of a disaster. Disaster paradigms and their related philosophical theories are thereafter discussed as they ultimately inform the resilience concept, discussed in the following chapter.

Study Motivation

This study was influenced on a number of levels, by different motivations. At a practical level, the number of natural disasters appears to be increasing in intensity and scope worldwide. What is striking is the ‘complicatedness’ or the ‘secondary’ impacts engendered by the initial ‘event’. The recent tsunami in Japan serves as an overt case-in-point whereby the earthquake-generated tsunami, caused the meltdown of the Fukushima nuclear power plant. A nuclear plant meltdown within itself has potentially short and long-term global consequences. However, to have the additional tsunami-created disaster to contend with, thus raised the ante to a much higher level.

The earthquake in ‘impoverished’ Haiti serves as an example on a different plane altogether. Worldwide appeals via the media and International NGO’s had brought the disaster ‘home’ to many of us. However, and as proof that ‘immunity’ from large disasters is non-existent, the Canterbury region and Christchurch in particular was rocked by two earthquakes within a six month period. For me, as a student within the Emergency management program and who desires to make a career within this field, the obvious question arose as to why was there such a vast difference between the outcomes of Haiti and Christchurch? Based on these discrepancies and understanding that overall disaster-recovery can take as much as 10 plus years, how could these affected societies get back on their feet again? In other words, how could they ‘bounce back’?

Secondly, on an academic level, the term and accompanying subject ‘resilient communities’ or societies is very much within the spotlight. From a theoretical perspective, the many theories and ideas surrounding resilience thinking are proposed though limited studies exist that comparatively demonstrate how communities ‘bounced back’ from a disaster. David McEntire, a

world renowned ‘disaster academic’ thus issued the challenge for a comparative approach in order to enable ‘us’ to better comprehend disasters and importantly, improve the practice of Emergency management.

The purpose of this study was twofold; to explore how a similar disaster agent can ‘create’ such different impacts and secondly, to describe the issues confronting Haiti and Christchurch in bouncing back from a disaster. Whilst accepting the overt limitations imposed by a dissertation, this research nonetheless used a descriptive case study approach which Yin (1994) depicted as being useful if a topic is going to be researched in the future. Thus, this study, whilst taking a ‘wide-angled lens’ approach, potentially serves as a ‘platform’ for later, in-depth research.

Aim of study

The purpose of this study is to explore and describe the factors that affect Haiti and Christchurch with ‘bouncing back’ from a disaster. This study has three aims:

1. To provide insight as to the diverse impacts on a ‘developing’ as opposed to a ‘developed’ society;
2. To highlight the similarities and differences that affect Haiti and Christchurch in bouncing back from a disaster?
3. To explore whether these factors are generated post- disaster or were they indicative of the daily landscape within which the population find themselves.

Layout of dissertation

In light of and consistent with my motivations for this study, parts of this dissertation adopt a philosophical approach. The idea driving this approach is to ‘get to grips’ with the concepts, paradigms and philosophies which underpin the disaster discourse. I felt that the appropriateness of this adopted position was justifiable on the grounds that ‘clarity of understanding’ was a necessary pre-requisite prior to engaging in the analysis of Haiti and Christchurch, two regions emanating from different parts of the world.

Chapter one gives a brief overview of Haiti and Christchurch. The focus then shifts to the central concepts that inform the broader field of knowledge within the disaster discourse. It begins by tracing the international disaster trends, highlighting the differences between Less Developed

Countries (LDC) and More Developed Countries (MDC). It then ‘tackles’ the much debated question as to “What is a disaster?” and closely-related to it, the ‘nature’ of a disaster. Disaster paradigms and their philosophical underpinnings are thereafter discussed as they ultimately inform the resilience concept, discussed in the following chapter.

Chapter two discusses how the difference in approach, between the two dominant paradigms affect the way disasters are viewed in different parts of the world i.e. the ‘developed’ and ‘developing’ world. The concept of vulnerability and its impact upon resilience, both central to the aims of this study, are then discussed with the understanding that exploring the linkage between these two concepts is vital in order to understand how communities/regions are impacted and bounce back from a disaster.

As disasters are dynamic processes, chapter three begins with the limitations that are inherent within disaster study. Christchurch is a prime example in that, the original intention of this study was to look at the earthquake of September 4th, 2010. However, as research was still being undertaken, the deadly second quake struck. Thus, the focus understandably switched to this event although the impacts of the first quake impacted upon the outcomes of the second. The rationale for the case study methodology as well as the documentary research method is then discussed. Thematic data analysis as well as the comparative cross-case analysis is described.

Chapters four and five ‘tell the stories’ of Haiti and Christchurch. Both stories are reflective of the unique background including the pre-disaster vulnerabilities, impact of the disaster agent and finally, the factors that affect the bouncing back process. Chapter six thereafter compares the two disasters and highlights the similarities and differences encountered. Themes that were generated by the analysis are then presented and discussed. Chapter seven concludes with an overview of the two disasters, the ‘connection’ to the disaster paradigms and finally the limitations of this study with recommendations proffered.

Background

Two powerful earthquakes of similar magnitude struck the Canterbury region of New Zealand as well as the Caribbean nation of Haiti within the space of a few months. Indeed, the experts maintain that the ‘quake felt within Christchurch on September 4th, 2010 was a ‘mirror image’ of the Haitian quake of January 12th, 2010 (Haigh & Amaratunga, 2011). However, still recovering

from the impacts of the initial damage, a second quake struck Christchurch on February 22nd, 2011. Besides the comparable magnitude, both ‘geophysical agents’ were located near major population centres. That is where the similarities end.

Whilst the damages sustained across the Canterbury region was extensive, the impact within Haiti can be described as catastrophic (Tiffen, 2010). This overt discrepancy between the loss of life and economic damage between these two regions highlights the international disaster trend which reveals that Less Developed Countries (LDC) are inordinately affected by disaster losses when compared with More Developed Countries (MDC). Consequently, both regions were declared disaster areas with the term ‘natural disaster’ routinely being applied. However, the term ‘natural disaster’ is something of a misnomer in that current understandings indicate that most disasters emanate from an anthropogenic origin. Wisner, Blaikie, Cannon and Davis (2004) point to the influence of economic, political and social forces in creating and shaping a community’s condition in which they find themselves, prior to a disaster ‘occurring’. The logical consequence of this understanding is that a disaster-state exists prior to the trigger-event exposing these underlying conditions. Thus, the term ‘natural disaster’ merely indicates the agent which triggers these conditions to surface as opposed to the disaster being of ‘natural causes’.

Indeed, many factors have since been identified which implicate these pre-disaster conditions as having a direct bearing on post-disaster outcomes. Thus, the notion that ‘disasters are the great societal levelers’ has long been discredited within the field of emergency management (Fordham, 1999; Fothergill & Peek, 2004). Historically though, the relationship between disasters and vulnerability is revealed in the correspondence between Voltaire and Rousseau surrounding the 1755 Lisbon earthquake whereby Voltaire suggested that “It is not the earthquake that killed the people of Lisbon, but the fact that they lived in Lisbon” (p. 199, quoted in Stromberg, 2007). This dialogue is tantamount to suggesting that nature did not construct the houses which collapsed; rather that the existing conditions directly contributed to the catastrophic outcome (Haigh & Amaratunga, 2010). Thus, the concept of resilience or the idea of ‘bouncing back’ from a disaster is intimately linked to pre-existing vulnerabilities within a community or nation. This is not to suggest that no other factors or conditions affect the resilience of a community or nation. Rather, it is indicative of a multitude of factors which greatly complicate a ‘bouncing back’ from the impacts of a disaster. Therefore, building

resilience into social-ecological (human-environment) systems characterized by future surprises and unknowable risks is viewed as a ‘rational strategy’ when contemplating the dynamics surrounding hazards (Berkes, 2007; Allenby & Fink, 2005; Tompkins & Adger, 2004).

Within the current global field of disaster studies, the trend is implicitly tending towards the development and building of a resilience culture. That is, societies possessing the skills, knowledge and resources to enable them to cope, adapt and ultimately ‘bounce back’ from a disaster (IFRC, 2004). This progression is viewed as an alignment within the changing disaster paradigm landscape which looks beyond short-term thinking and instead seeks to link the concept of resilience within a broader sustainability framework. With the adoption of the Hyogo Framework for Action 2005 – 2015 by the United Nations International Strategy for Disaster Reduction (UN/ISDR) highlights the document “*Building the resilience of nations and communities to disasters*” as a significant step in this direction (Manyena, 2006). Godschalk (2003) adds that resilience is important for two reasons; namely, because the vulnerability of technological and social systems cannot be completely predicted and moreover, people and property should cope better in resilient areas struck by disasters. That is, within resilient regions, fewer buildings would collapse, a limited number of deaths would occur and ultimately, the return to a pre-event functioning would occur at a ‘more rapid’ rate as opposed to regions that were less resilient. Thus, the element of time is an important aspect of this ‘equation’. This approach is however not sustainable within Less Developed Countries (LDC) whose challenges differ distinctly from those faced in More Developed Countries (MDC).

This study looks at two regions that are different in many ways including historically, institutionally and geographically. Christchurch is ‘typical’ of the trappings of a city, located within an MDC. Being democratically stable, technologically advanced and rich in resources amongst others, carries with it certain expectations from the populace. Conversely, the ‘oft-quoted’ image of Haiti is one of negativity and despair, whether rightly or unfairly labeled.

The two disasters being compared are well suited to the task at hand on many levels. Firstly, both areas were impacted by a similar disaster agent. Thus the characteristics of the agent are similar in that they can be described on multiple dimensions including; frequency, predictability, duration, scope of impact and destructive potential (Wenger, 1978). Directly applicable to these

cases, an earthquake as opposed to other natural hazards, occurs without warning, the duration lasts a few second with the impact normally widespread and destructive. Agent characteristics are relevant to this study as they point to the divergent consequences in relation to the forces generated by the earthquakes. Secondly, the earthquake that struck Christchurch occurred in a country that is world-renowned for its earthquake preparedness in terms of disaster management legislation and policy. Furthermore, New Zealand has an international reputation for designing and building earthquake-proof buildings. Contrastingly, within Haiti, issues of disaster preparedness assume a lesser-priority when measured against daily challenges confronting society.

Current disaster trends

It is estimated that approximately 220 natural catastrophes, 70 technological disasters and three new armed conflicts occur each year (Alexander, 2005). Between 1974 and 2003, the Center for Research on the Epidemiology of Disasters (CRED) estimate that more than 255 million people were affected annually by disasters with an average of 58000 fatalities. In terms of disaster losses, O'Brien, O'Keefe, Rose and Wisner (2006) point to a revealing discrepancy between less developed countries (LDC) and more developed countries (MDC). They indicate that the most poor and marginalized, invariably located in LDC, bore the brunt of majority deaths and injury whilst two-thirds of overall economic losses were sustained by MDC. Hurricane Katrina (2005) serves as an example in that initial projections indicated that the overall death toll would be in the range of thousands. However, the final death toll was calculated to be less than 1000. The economic impact though was estimated to range from \$200 to \$400 billion. Contrastingly, the Indian Ocean tsunami accounted for approximately 200 000 deaths with approximately 100 000 missing (McEntire & Mathis, 2007). Region-wide economic costs are unknown though Sri Lanka serves as a further example in that 30 597 inhabitants were killed with overall costs estimated at \$1 billion (Athukorala & Resosudarmo, 2006).

Overall, disaster trends indicate that the period 2002 and 2010 has seen an upward spike in the number of natural disaster fatalities though it is contested whether the number of disasters has increased (CRED, 2010). Notably Quarantelli (2001) has subsequently questioned the validity of the data utilized to collate disaster statistics with Gall, Borden and Cutter (2009) venturing so far as to suggest that these discrepancies impact upon efforts to build resilient and sustainable

communities. These ‘criticisms’ are not intended to detract from the overall disaster trend but appear rather to be indicative of the lack of standardization in terms of the definition of a disaster as well as the absence of standard metrics in assessing the damages incurred by a region.

What is a disaster?

It is said that defining what exactly a disaster is, will greatly impact upon efforts to reduce their incidence (Quarantelli, 1995; Perry 2007). Indeed, Mcentire (2001) adds that this fundamental question still remains a challenge for practitioners and academics today. Part of the problem may emanate from the disparate range of disciplines which comprise the disaster ‘field’ with Alexander (2005) identifying seven separate disciplines as contributing to the ‘expertise’ on disaster studies. These range from geography, anthropology, sociology, development studies, geophysical sciences, engineering and social psychology. He adds that many of these schools have not sought to define a disaster prior to contributing to the disaster process. Problems generated by this glaring oversight thus generate inconsistencies in reporting and comparing disaster data as elucidated by Guha – Sapir, Vos, Below and Ponserre (2011), who add that these discrepancies extend to human and economic losses incurred. Oliver-Smith (1999) highlights the significance of seeking a “definitional consensus” (p. 19) though this is not to suggest that this deliberation should be the focal point of disaster studies. It is rather that this question has the potential to prompt an exploration of earlier and emerging dimensions of disaster in an ever-increasing hazardous environment. Thus, significant concerns will be clarified, novel perspectives and problematic areas expanded and crucially, new possibilities for practice explored. From an academic and research perspective, Perry (2007) contends that this issue forms part of ‘sound’ theory and methodology which directly translates into “a clearer vision of the field of study” (p. 1). The practical benefits are that ‘anomalies’ in research findings would be cleared up and thus the stage set for the crucial tasks of explanation, prediction and control. A note of caution is sounded by Quarantelli (1995) who adds that discrepancies surrounding the characteristics, conditions and consequences of disasters will persist unless a ‘minimum consensus’ on the defining features of a disaster, is clarified. In other words, defining what is a disaster will lead to an understanding as to the nature of a disaster. A logical progression therefore would invariably entail where solutions are sought, and the shape and character of the means that are employed to arrive at these solutions (Weichselgartner, 2001). Perhaps, delving

into the historical perspectives which have framed present-day understandings of disasters may shed some light on this elusive, yet evolving concept.

The nature of a disaster

Notwithstanding the conceptual differences that exist in the literature, Peek and Mileti (2002) highlight the common elements pertaining to natural disasters and their subsequent impacts as “the consequence of the interaction between the natural, social and constructed environments and are initiated by some extreme event in the natural world” (p. 512) and that a degree of social disruption occurs as a result of this interaction. The ‘extreme events’ are thus classified as trigger-agents which may emanate from the natural environment, human activity or a combination of the two (McEntire, 2001; Oliver-Smith, 1999). Therefore, the impact of these triggering agents, when colliding with pre-existing vulnerabilities within a community or region, generates what is termed a disaster (Alexander, 2005; Bankoff, 2001).

Further insight into the nature of a disaster reveals that it is viewed as non-routine, destabilizing, generates uncertainty and disorder and potentially socio-cultural collapse (Oliver-Smith 1999). This approach thus assumes that disasters are a departure from ‘normal’ social functioning with the implication being extended to disaster recovery, as being a ‘return to normal’. This position would tend to suggest that a ‘normal’ state or ‘societal equilibrium’ existed prior to a disaster occurring. Bankoff (2001) critiques this interpretation of disasters as a departure from normalcy by highlighting its overt limitations. This he indicates as primarily due to the denial of broader historical and social dimensions of a hazard resulting in solutions that assume a purely technocratic focus thus minimizing’ the pre-existing social conditions. However, McEntire (2001) reiterates the pre-existing vulnerabilities which he labels as the ‘dependent component’ of a disaster. Therefore, identifying these components implies that vulnerabilities may be generated or exacerbated by various factors operating within society. In other words, these vulnerabilities are socially constructed.

In keeping with this theme, Wisner, Blaikie, Cannon and Davis (2004) allude to the ways in which social systems operate in generating disasters by making people more vulnerable. This alternative view is seen as a marked shift away from the earlier emphasis on the physical trigger-agents emanating from the natural environment. A criticism of this ‘natural hazards paradigm’ or

“dominant view” as listed by Hewitt (1995; 1983, p. 5) is that it fails to account for the vulnerabilities within a disaster-affected society. Crucially, he adds that this paradigm placed the source of disaster outside of society rather than within it and consequently, communities are viewed as passive victims. Thus, the ‘view’ of disasters is expressed as:

“..... disasters are viewed as unmanaged phenomena. They are the unexpected, the unprecedented. They derive from natural processes or events that are highly uncertain. Unawareness and un-readiness are said to typify the condition of their human victims. Even within the official-sounding euphemism for disasters, they are unscheduled events” (Hewitt, 1983, p. 10).

This prevailing ‘dominant view’ is equally contested by Oliver-Smith (1999) which he describes as “The environmental versus the social location of disasters” (p. 24). However, he acknowledges the ‘tenaciousness’ of the natural hazards paradigm even though largely discredited, as persistently influential within contemporary disaster management policy. In fact, this level of influence is highlighted by Bankoff (2001) who points to four of the five goals of the International Decade for Natural Disaster Reduction, adopted by the United Nations as underpinned by technocratic measures. This would tend to perpetuate the position that coping with disasters can only be achieved through the dissemination of technical information and the transfer of scientific and engineering knowledge. Whilst this (behavioural) view may have a greater relevancy within the ‘developed’ world, it has less applicability within the ‘developing’ world in that disaster causation emanates from a different set of variables, a position elucidated by the rival structural approach (Hilhorst, 2004). However, (and as shown above), this has not stopped the ‘technological and expertise’ transfer as part of the modernization or ‘development’ process.

Philosophical foundations

Mcentire (2004) highlights the development of the two competing paradigms which have had a profound impact upon the different disaster ‘approaches’ which he labels as “conservative” or behavioral and “radical” or structural (p. 195). In dissecting these ‘theories of development’ Mcentire articulates the impact of Max Weber’s cultural and institutional theory (conservative) and the ‘radical’ theory espoused by Karl Marx, on disaster scholarship and ultimately on

resilience thinking. Early thought expounded by Aristotle, posited that “empirical reality and the actualization of potential were subject to the laws of birth, growth, maturity and decay”. However, during the enlightenment era, “this pessimistic assumption of death and decay” was superseded by a view of “unending achievement” (p.194). Thus, with the ‘dawning’ of the industrial revolution, wherein remarkable changes in technological, economic and social spheres occurred, the possibility of progress began to assert itself significantly. Ultimately, overt disparities between modern (urban, industrial, civilized, dynamic, secular/rational) and traditional (rural, agricultural, primitive, static, sacred) societies were keenly observed by scholars such as Maine (1861), Tonnies (1957) and Durkheim (1949). Thus, ‘theses of development’ which attempted to ‘capture’ the transition from a traditional to a modern society, were theorized by amongst others, Marx and Weber. Underpinning this development thesis is the idea that the shift to a modern society facilitated by economic development would ultimately reduce vulnerabilities (Baker, 2009, Cannon, 1994). As a consequence therefore, disasters are a product of the vulnerabilities ‘inherent’ within ‘those regions’ who display “insufficiently modernized relationships” with nature (Hilhorst, 2004, p. 58).

McEntire (2004) further articulates how Marx was particularly intrigued by the impact of capitalism on development. He thus viewed the development process as occurring in stages from tribal, ancient, feudal and capitalist to ultimately a socialist mode of production. Furthermore, Marx asserted that whilst capitalism would generate great wealth, it would also lead to great inequities. Ultimately, this process would lead to a ‘class conflict’ which in turn, would result in an altering of social, political and economic relations within a state. Thus, progress is achieved through equality in economic relations. Of direct consequence to disaster theory, Marx’s thesis of development ultimately implies focusing on structures and cultures that create vulnerability within a society. Conversely, Weber observed that the continuing political, economic and social changes would not necessarily result in a ‘socialist’ form of government (McEntire, 2004). Rather, he contended that societies could assume numerous guises, contingent upon the organization and legitimacy of authority. Therefore, societies could be classified as being ‘traditional’ (dominated by a patriarch), ‘charismatic’ (dominated by a dynamic, powerful or influential leader) or ‘rational/bureaucratic’ (dominated by the civil servant). Despite the differences between these three typologies, Weber’s focus was ultimately oriented towards the

nature of societies based on the rational/bureaucratic approach with capitalism being viewed as the highest form of rationalization in Western civilization. Parallel to this focus, McEntire (2004) adds that Weber “was captivated by the structure and functions of modern, bureaucratic institutions” (p. 195). Thus bureaucracy, specialization and professionalization led to knowledge generation, improved efficiency and also produced adaptive social, political and economic systems. Therefore and as a consequence of this Weberian view, an increased “rationalization and bureaucratization” was seen as a means of contending with hazards (McEntire, 2004).

Impact on prevailing paradigm

Dominating the early scientific discourse on disaster causation was termed the Hazards paradigm. This approach, initially spearheaded by White’s (1945) pioneering thesis on people’s adjustments to flooding in the USA, stressed the importance of the ‘extreme forces of nature’ as the cause of disaster (Gaillard, 2010). Thus disasters were seen as temporary unavoidable extreme physical events that required technocratic solutions administered by bureaucratic organisations (Bankoff, 2001; Smith, 2004). The current foremost proponent of the behavioral paradigm and significantly influenced by White, Denis Mileti argues that culture is to blame for the ‘alarming’ escalation in disaster costs. Mileti (1999) asserts that attitudes, values and behaviours effectively constrain a sustainable adaptation to natural hazards. This he attributes to the processes by which societies have developed which effectively promote a natural hazard morphing into a disaster (O’Brien, O’Keefe, Rose & Wisner 2006). This approach promotes ‘human adjustment’, based on resource utilization as a means of reducing the negative impacts of disaster. However, a sometimes ‘blurry’ distinction is made between adaptation and adjustment in that; adjustments are viewed as incidental or purposeful actions such as constructing a dam or building an earthquake-proof house (Hufschmidt, 2011). Conversely, adaptations are ‘woven’ into the long-term response of a community and may include implementing or adjusting building codes as well as insurance schemes, amongst others.

A consequence of the hazards paradigm, particularly relevant within the Western world is that technology will render humanity safe from the destructive forces of nature. This reliance on technology such as dams and warning systems, therefore ‘permits’ settlement on ‘formerly’ hazardous locations. “Western peoples tend to believe and act as if losses are caused by surprise extreme events, rather than by choices about how and where buildings are located and other

development that takes place” (Mileti, 1999, p. 145). However, Mileti, (behavioural paradigm), therefore proposes a number of largely technocratic solutions including land-use planning, warning systems, engineering and building codes, insurance and the utilization of technology. Furthermore, he recommends cultural adjustments such as the rejection of short-term thinking and the acceptance of responsibility for hazards and disasters. This should be supplemented by providing education and training, developing a ‘disaster-losses’ database, as well as the sharing of knowledge. This approach has generated what is termed, the ‘levee effect’ which posits that once measures are taken to protect against a disaster, the populace places what Stefanovic (2003) describes as “unrestrained and often inappropriate faith” (p. 242) in the power of the technology to protect them. McEntire (2005), utilizes this ‘levee effect’ thinking as a critique of the vulnerability paradigm by displaying that vulnerabilities are also ‘created’ within MDC and not restricted to LDC. With development occurring on these ‘formerly unsafe’ locations within MDC, disasters such as Hurricane Katrina are stark reminders that these ‘protective measures’ do have limitations.

A limitation of this natural hazards paradigm is that it renders social understanding secondary, if not impossible as it places the sources of risk ‘outside society’, that is in the environment. Consequently, this outlook logically encourages what Hewitt (1998) lists as an ‘adversarial view’ of the relations between environment and society with the environment being seen as “the enemy” or “the environment as hazard” (Burton, Kates & White, 1993). Thus, communities, populations or the public are viewed as passive victims of natural disasters, a view at odds with studies which reveal that when confronted with vulnerabilities, communities actively employ constructive measures to reduce them (Baker, 2009; Frerks & Bender, 2004). Furthermore, Hewitt adds that any action taken by at-risk communities are seen as done in ignorance or as a result of mere perceptions since knowledge ‘appears’ to lay within the domain of technical expertise, therefore ‘out of reach’ of the lay-person. Therefore, technical solutions, undertaken by professional and mission-orientated agencies are the means necessary to ‘confront and tame’ nature (Cutter, 2005; Hewitt, 1998). Other criticism of this approach is that it is viewed as a ‘deterministic and materialistic’ understanding which again, reflects unjustified confidence in technology and capitalism (Smith, 2004; Alexander, 2005). Over-emphasizing the role of

individual choice in hazard-related decisions often at the expense of broader social and economic forces, are listed as a further critique of this paradigm.

Stefanovic (2003) extends this debate into the philosophical realm by asserting that the behavioural paradigm blends itself to the reductionist, positivist worldview which is popular within 'Western' thinking. The argument she develops is that positivism, which contends that which can be empirically measured and quantified, essentially defines what is real and true. Reductionism assumes that complex problems are best analyzed when they are broken down (reduced) into smaller, component parts. As a logical consequence, Stefanovic adds that technocratic solutions are therefore relied upon as being the most efficient. Concurrent with this approach, the environment is viewed as a source of risk especially when natural extremes create conditions that lie beyond the normal coping ranges of society. Therefore, a process such as adapting human behavior to cope with future disasters, would be viewed as 'too vague' as it does not specifically focus on concrete reduction strategies.

Challenging this dominant outlook of disaster causation and influenced largely by Marxist perspectives, the radical thesis asserts that poverty and related social processes are fundamental contributing factors in understanding disasters. These structural factors in turn generate vulnerabilities which are largely the result of economic, social and political processes (Cannon, 1994). Thus 'normality' as viewed through Western eyes is an illusion because disasters arise from persistent disadvantage. Therefore, disaster victims are perceived as not responsible for their misfortunes as effective responses are hindered by a limited resource pool. In summary, this view contends that disasters arise through under-development which is a consequence of unequal trade arrangements between rich and poor nations (Smith, 2004).

In positioning the distinction between poverty and vulnerability, Delica-Willison and Willison (2004) add that it would be "an over-simplification to deduce that poverty and vulnerability are one and the same" (p. 147). They assert that poverty and vulnerability should be viewed as the 'same sides of the same coin' in that a disaster impacting upon vulnerable (invariably rural) people has the potential to create more poor people. However, they acknowledge that an increased marginalization of the poor occurs due to discrimination as well as a denial of access to resources. A consequence is the migration of these afflicted people (rural proletariat) into less

productive or high-risk areas (urban proletariat), which are invariably susceptible to natural hazard activity (Smith, 2004). Wisner et al. (2004) express this marginalization as manifesting itself in three ways: socially, as a result of poverty, geographically because they live in hazard-prone areas and politically because their voice is disregarded. Thus, the trigger-events such as a flood or an earthquake merely expose these underlying conditions, oftentimes with devastating consequences.

An example of this crucial relationship between poverty, migratory patterns and disaster exposure is vividly highlighted by the impact of Hurricane Mitch in Nicaragua (1998). Expansion of multinational economic activities forced poor peasants to move from fertile land to poor accommodation on the slopes of deforested volcanic slopes. Thus, when the hurricane struck land, these shantytowns were swiftly and violently exposed (Comfort, Wisner, Cutter, Pulwarty, Hewitt, Oliver-Smith.....Krimgold, 1999). Within the developed world, Cutter (2005) points to Hurricane Katrina as a further example of developments which created an altered 'social geography'. In a process mimicking Nicaragua, urban migration from rural areas subsequently culminated in further impoverishment with poor housing and associated squalid conditions. Cutter adds that this housing was invariably located in the least desirable locations including reclaimed land. This paradigm therefore views disasters as not necessarily being unpredictable or unexpected. Rather, the diverse activities of human beings contribute significantly in the creation of vulnerable populations. As a counter-measure, this paradigm thus proposes a reordering of the social, political and economic relations as a means of reducing disasters. Thus, Smith (2004) asserts that 'modernization' theory is rejected with a preference for a reliance on local knowledge as opposed to imported technology.

It is fair to suggest that both paradigms contain positive elements, which in some ways provide a complementary approach. By extension, the radical approach is correct to assert that poverty is directly related to disaster. That is, communities that lack the necessary economic resources tend to reside in hazardous locations, dwell in unsafe structures and work in dangerous occupations (McEntire, 2004). Reinforcing this relationship, the Centre for Research on the Epidemiology of Disasters (CRED) alludes to the statistical analysis of disaster impacts. The report titled "Thirty years of Natural Disasters" compares and contrasts the world's 10 richest as opposed to the 10 poorest nations (Guha-Sapir, Debarati, Hargitt, Hoyois, Below & Brechet, 2004). The figures

point to a stark disequilibrium with the poorer nations showing a greater proportion of victims, relative to their population size. However, with the emphasis on poverty, a shortcoming of this approach is that the potential exists for ignoring behavior, attitudes and personal responsibility within disaster causation. Conversely, the conservative approach points a finger at the apathy of people as an important causal factor in disasters. However, with its emphasis on culture, it equally runs the risk of ignoring the constraints imposed by social structure (McEntire, 2004).

It is quite interesting to note that these paradigms emanate from different ‘parts’ of the world. That is, the conservative approach has the familiar feel within the developed world with its “rationalization and increased bureaucratization” processes (McEntire 2004, p. 195). Conversely, the radical outlook was largely developed with the developing world ‘in mind’. This is not to suggest that vulnerabilities do not exist within developed countries and that specific technocratic solutions are not applicable within developing countries. On the contrary and as highlighted above, both approaches can inform and complement each other. The key difference however, lay with the understanding that disasters are created as a result of vulnerabilities which exist within society. Thus, the ‘tension’ between the natural hazards and vulnerability paradigm reflect the ‘approach’ to disasters between the Most Developed Countries (MDC) and Less Developed Countries (LDC) which could be referenced by Christchurch and Haiti respectively. These differences are possibly as a result of the different philosophies which inform them and consequently impact upon the responses or processes in order to cope with them. Thus, this relationship could be viewed as:

Table 1: Paradigm relationship

Natural Hazards Paradigm	Philosophical foundation	Disaster view	Response
-Limited adaptation to natural hazards (Mileti, 1999) -Emphasize physical trigger agents -Scientific & Engineering approaches	Conservative/behavioural	Environment as risk	-Technocratic solutions -Bureaucratic organizations -‘Levee’ effect -Disaster plans
Vulnerability Paradigm	Philosophical foundation	Disaster view	Response
-Hazard affects vulnerable people producing disaster (Wisner, Blaikie, Cannon and Davis (2004) -Lack of development	Radical/Structural	Social location of disaster	-Decrease vulnerabilities -Change power structures, political/economic -Community-based adaptation

As a means of understanding the relationship between these two paradigms, and their impact on disaster studies, McEntire (2004) stresses the necessity of understanding and exploring the concept of vulnerability. He adds that it is vulnerability that “permits explanations from both the critical and traditional theoretical camps” (p. 197). O’Brien (2008) identifies vulnerability as the ‘starting point’ for resilience building. This view is consistent with the Hyogo Framework (2005) which acknowledges vulnerability as intrinsically linked to the resilience building of a community. That is, in order to understand and discover the processes and strategies which facilitated or hindered a community with ‘bouncing back’ from a disaster, attention needs to be paid to the inherent vulnerabilities of that community.

Chapter 2: Literature review

Introduction

The concept of vulnerability and its impact upon resilience, both central to this study, are discussed with the understanding that exploring the linkage between these two concepts is vital in order to understand how communities/regions are impacted and bounce back from a disaster. Contemporary resilience thinking has been shaped and formed by the changes which have occurred within the disaster paradigm over the last three decades (Manyena, 2006). By attempting to understand and hence elaborate on the key concept of resilience, it posits that ‘getting to grips’ with the concept of vulnerability is fundamental for this task due to the ‘intimate’ relationship between these concepts.

Vulnerability and Resilience

Exploring the conceptual linkage between vulnerability and resilience is an important undertaking in order to inform the discussion on how communities and nations react to and ultimately recover from a disaster (Porfiriev, 2009). Zhou, Wang, Wan and Jia (2009) add that this association is significant as it impacts directly upon the meaning, implications and applications of resilience. Vulnerability, according to Tobin and Whiteford (2002) provides the “contextual conditions of society”, a pre-requisite to address resilience (p. 29). Primarily, both concepts emerge from different traditions with resilience theory largely emanating from the natural sciences, particularly ecology (Gallopín, 2006; Folke, 2006; Miller, Osbahr, Boyd, Thomalla, Bharwani, Ziervogel.....Nelson, 2010). Conversely, vulnerability exhibits a greater diversity in terms of disciplinary and cultural contributions (Miller et al, 2010; Oliver Smith, 1999; Adger, 2006). This diversity consequently, carries with it numerous tensions and debates. Indeed, Manyena (2006) questions the relationship by asking whether resilience is the opposite of vulnerability, resilience a factor of vulnerability, or the opposite and by Miller et al. (2010) who enquire whether resilience and vulnerability are complementary or conflicting concepts.

Essentially, ‘vulnerability research’ seeks to understand and explore the underlying causes of hazard exposure, the level at which it occurs and the central actors involved. It thereafter seeks to identify opportunities for reducing risk, coping and adaptation (Miller et al., 2010). Resilience on the other hand, is focused on a far more positive (proactive) approach seeking solutions (policies

and programs) as to facilitate a community ‘bouncing back’ from a disaster. Thus, resilience is intimately linked to the ‘response component’ of vulnerability (Gallopín, 2006).

What is vulnerability?

Cannon (1994) raises a pertinent question by asking, “What is it about the condition of people which makes it possible for a hazard to become a disaster” (p. 20)? By accepting that a hazard is natural, a disaster not necessarily so, what facilitates a natural event such as an earthquake from producing two different consequences? By focusing on people (as opposed to the hazard agent), Cannon (1994) situates his enquiry within the ‘structural’ paradigm. Thus, he directly attributes disasters to the vulnerability generated by the ‘condition’ of the populace within a specific political, historical and economic system.

Conceptual problems surrounding the concept of vulnerability have subsequently led to many divergent definitions. Birkmann (2006) adds that there are at least 25 different definitions, concepts and methods to systemize vulnerability. The clarity of the concept or consistency in application, according to Weichselgartner (2001) has been obscured by the different epistemological orientations and subsequent methodological practices. Additionally, there is considerable variation in the choice of hazards themselves (e.g. natural, technological, man-made, chemical, and instrumental), the scale (global or local) and the regions selected for examination (developed versus developing). However, Cutter, Boruff and Shirley (2003), underline what are considered to be the three central tenets within disaster research viz. vulnerability as exposure to risk/hazard; vulnerability as social response and the vulnerability of places. Thus, a definition which encompasses these central themes and expounded within the International Strategy for Disaster Reduction (UN/ISDR), views vulnerability as:

“The conditions, determined by physical, social, economic and environmental factors or processes, which increases the susceptibility of a community to the impact of hazards”
(UN/ISDR, 2004, p. 24)

This definition reflects the current general consensus that vulnerability to disaster is determined not simply by a lack of wealth. Rather, it is indicative of a complex range of physical, economic, political factors or the social predisposition of a community in the face of natural hazards (Manyena, 2006).

Vulnerability Analysis

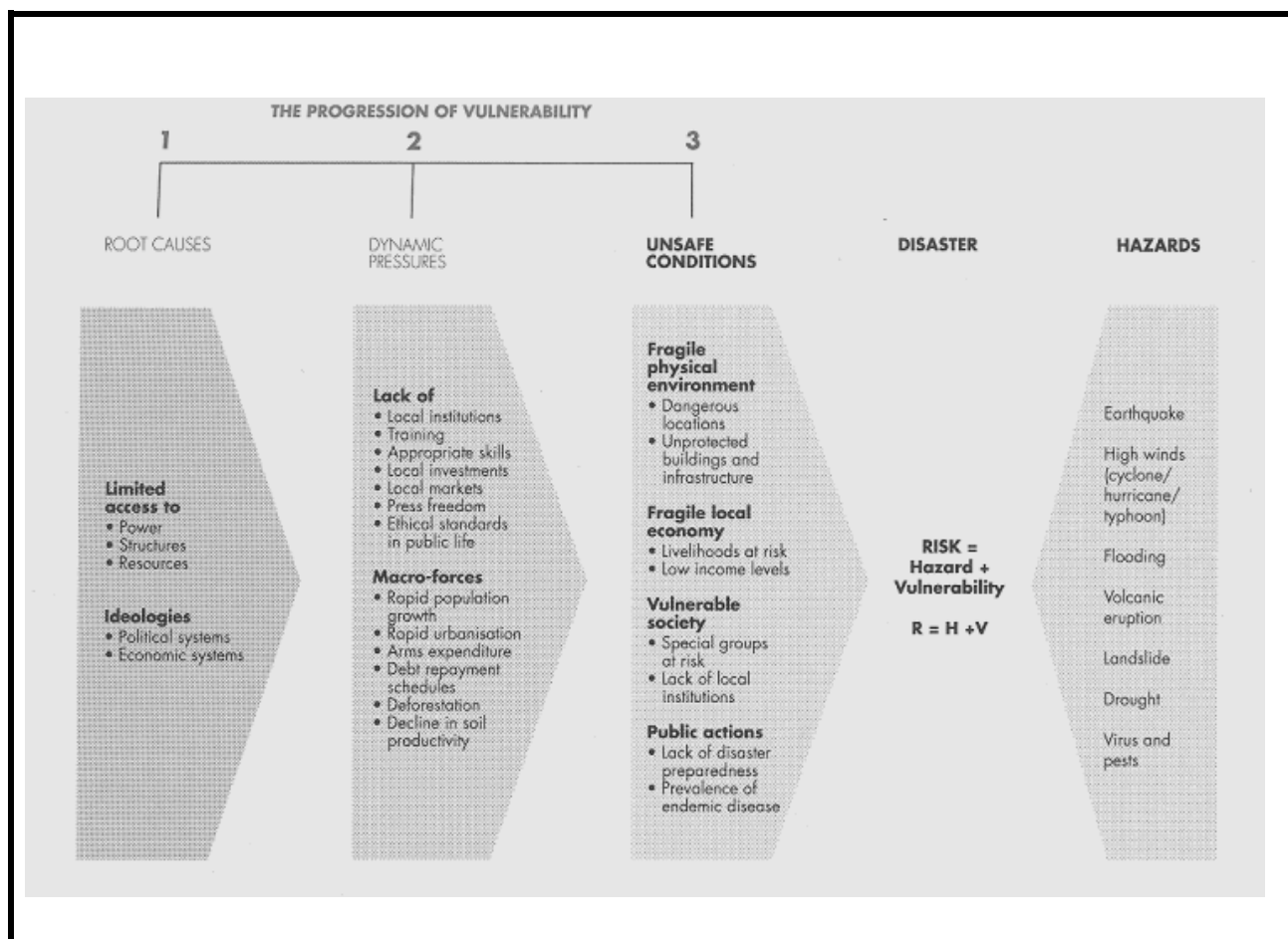
Various methods have been proposed to explain disaster causality particularly from a vulnerability and hazard perspective. Most influential amongst these is the Pressure and Release (PAR) model which is conceptualized as two opposing forces: the processes, conditions and factors that generate vulnerability intersecting with the physical exposure to a hazard (Wisner, Blaikie, Cannon & Davis, 2004). Thus, to 'relieve' the pressure, vulnerability has to be reduced. (Weichselgartner, 2001; UN/ISDR, 2005).

Within LDC countries, this process assumes the guise of the aptly named, Disaster Risk Reduction (DRR) whose two-pronged approach is directed toward reducing vulnerabilities and risks to hazards. Reduction activities however, fall under the overall mantle of sustainable development which underpins strategies and processes aimed at reducing disasters. Thus, it is not unusual for disasters to be referred to as 'failed development' within LDC (O'Brien, O'Keefe, Rose & Wisner, 2006). What distinguishes the divergent approaches between LDC and MDC, is chiefly the activities undertaken by the United Nations and other international organizations in assisting these nations in sustainable development and disaster reduction initiatives (Hyogo, 2005; Collins, 2009). This is, at least on a superficial level, essentially due to resource limitations, including lack of skills as well as governance issues which appear to be quite precarious within the less-developed countries.

Handmer and Dovers (1996) refer to this 'internationalized' approach with national governments finding themselves effectively side-lined whilst the United Nations and nongovernmental (NGO's) agencies occupy centre stage. Gaillard (2007) argues that this approach fosters a 'top-down' transfer of knowledge, technology and experience from the affluent countries to the 'poorer' because these countries are allegedly unable to cope without external assistance. Thus he contends that risk reduction can be viewed as a neo-colonial activity superimposed by regulation administered by the most affluent countries. As a consequence, this technocratic hazard approach which was earlier pointed out to be the 'dominant view' within developed countries now appears to be gaining ground. This Gaillard (2007) attributes to the influence of the media as well as political and scientific discourse currently gaining traction especially within the climate change arena which regards Nature as the danger source. Therefore, in a somewhat

‘circular motion’, it appears that governments have a useful scapegoat for blaming disaster causation and thereby avoiding their responsibilities in addressing vulnerabilities.

Figure 1: Pressure and Release (PAR) Model



Source: Wisner et al. (2004, p. 51)

From an epistemological viewpoint, the PAR model provides a ‘connection’, between the two paradigms which hold sway within the disaster discourse viz. hazards and vulnerability. This application is particularly relevant to the developing world (Weichelsgartner, 2001; Adger, 2006; Birkmann, 2006; Wisner, Blaikie, Cannon & Davis, 2004) in that it traces the social construction of disaster, whose causes may not be overtly obvious. Thus, by analyzing the progression of vulnerability, it is fair to suggest that a ‘disaster state’ exists prior to an agent (hazard) exposing the underlying conditions (Watts, 1983; quoted in Bankoff, 2001). As a consequence of this disaster and in light of the underlying dynamics, effective disaster recovery is unlikely without

outside support. Quarantelli (1986) neatly captures this dynamic as ‘demands exceeding capabilities’. Thus, ‘unmasking’ vulnerability’s pedigree is more than an academic exercise; it has real practical value in terms of disaster preparedness, relief and recovery (Bankoff, 2001).

Connotations for resilience

Within this disaster framework, the closely-connected concept of resilience refers to the processes and strategies utilized by a community to ‘bounce back’ from the effects of a disaster. Consistent with the contestations that permeate the disaster discourse, the concept of resilience displays what McEntire et al. (2002) describes as a lack of ‘definitional consensus’. However, Manyena (2006) contends that multiple definitions are not problematic with the proviso that they do not cloud conceptualization. A popular definition within the literature is posited by Cutter, Barnes, Berry, Burton, Evans, Tate and Webb (2008) who define resilience as:

“The ability of a social system to respond and recover from disasters and includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change and learn in response to a threat” (p. 599).

At a basic level though, a common thread within the literature implies the ability to bounce back and ultimately recover after a disaster occurs (McEntire, Fuller, Johnston & Weber, 2002). This view ultimately links resilience to the ‘recovery phase’ of the disaster cycle. Immediately however, various issues arise from this definition especially if one considers the state of vulnerability that existed prior to a disaster, implying that a ‘bouncing back’ would return a community to a less-than desired state (Klein, Nicholls & Thomalla, 2004). Nonetheless, proponents of this concept are generally focused on the rate at which a community/society can return to a state of pre-event functioning (Norris, Stevens, Pfefferbaum, Wyche & Pfefferbaum, 2008). The direct implication is thus; the more rapid the return to the pre-event functioning levels, the greater the resilience. Hence, reducing vulnerabilities directly impacts upon resilience levels which would indicate that resilience is seen as the ‘flip-side’ or ‘antidote’ to vulnerability, though this notion is clearly contested (Klein, Nicholls & Thomalla, 2003; Gallopin, 2006, Manyena, 2006; Handmer & Dovers, 1996; O’Brien, 2008).

With the adoption of the Hyogo Framework for Action (HFA), “*Building the resilience of nations and communities to disasters*” by the United Nations International Strategy for Disaster Reduction (UN/ISDR), the emphasis is thus placed on communities and nations in coping with a disaster. So influential was the impact of this concept within the disaster discourse that Manyena, (2006) describes it as the “birth of a new culture of disaster response” (p. 434). In concurring, Birkmann (2006) emphasizes the ‘high recognition’ that resilience has attained as well as its prominent position in controlling the debate thereafter. *The World Disasters Report (2004) – Focus on Community Resilience*, penned by the International Federation of the Red Cross (IFRC) and Red Crescent Societies (RCS), similarly reinforces the high visibility of resilience by stating that “[...] resilience has become the buzz word to describe the capacity to survive, adapt and bounce back” (p. 11). Whether resilience is a process or an outcome however, remains unclear (Manyena, 2006).

The current approach thus signals a move away from the loss or deficit paradigm from which vulnerability emanates, towards one of resilience in that the emphasis is on identifying and building capacities as opposed to merely examining deficits and vulnerabilities (Paton & Johnston, 2001; Sapountzaki, 2007). Within this outlook, resilience is viewed as a process with a distinction being made in what Handmer and Dovers (1992) have identified as proactive and reactive resilience. Proactive resilience, which is here linked to the pre-disaster ‘readiness phase’, is viewed as an ‘adaptive or anticipatory capacity’ and includes planning and preparing, thus instituting measures aimed at strengthening communities and reducing vulnerabilities. This extends to, and includes utilizing factors such as economic wealth, technology and infrastructure, information, knowledge and skills, the nature of institutions and commitment to equity and social capital (Klein, Nicholls & Thomalla, 2003). By instituting these measures, these communities therefore have the ability to better absorb, cope and ultimately recover from the impacts of a disaster or as Tobin (1999) states: “Societies which are structurally organized to minimize the effects of disasters, and at the same time, have the ability to recover quickly by restoring socio-economic vitality to the community (p. 13). With the demands of this approach, it is not surprising that developing countries such as Haiti are less likely to engage in a proactive resilience process. In contrast, reactive resilience approaches the future by strengthening the status quo thus making the current system resistant to change. By implication, this approach

suggests attempting to ‘bounce back’ from disaster without instituting proactive mechanisms, policies and structures.

It could be argued that in order to engage in this ‘resilience process’, it is necessary to possess the above-mentioned resources and capacities, including massive financial investment and specialized skills, which are largely lacking within LDC, as indicated by their vulnerability status (Handmer & Dovers, 1996; O’Brien, O’Keefe, Rose & Wisner, 2006). Whilst these measures are essentially top-down, LDC display, what Smith (2004) and Gaillard (2007) have identified as ‘traditional resilience’. This form of resilience is directly linked to the idea of utilizing the social capital including knowledge and skills inherent within these communities who essentially live daily in a ‘disaster state’. Thus, it would be fair to suggest that it may not be the ‘one-off’ hurricane, earthquake or other geophysical agent that is of concern to these societies but rather the challenges faced by daily existence (Wisner, Blaikie, Cannon & Davis (2004). This is borne out within the “hierarchy of risks” listed by Cannon and Muller-Mahn (2010) whereby issues such as water supply, security, unemployment or traffic accidents are given a higher priority than sudden disasters.

Not that reactive resilience is confined to less-developed countries with a critique being leveled at the United Kingdom’s Resilience program (Manyena, 2006). Though it has been lauded for its response capabilities, a severe limitation is the absence of broad-scale community involvement. Thus raising awareness, public education and risk communication strategies are lacking within this ‘organizational approach’ to preparedness. It is thus viewed as an outcome-based resilience program in that responses will come ‘naturally’ from affected communities (O’Brien, 2008).

Approaches to resilience

The approach taken toward ‘building’ resilience within communities varies between nations especially between the LDC and MDC countries. Within LDC and notwithstanding the ‘traditional resilience’ of the population, approaches to resilience are generally subsumed as part of sustainable development, normally under the auspices of NGO’s and as prescribed by the Hyogo Framework for Action (2005 – 2015). However, New Zealand and other ‘like-minded’ countries for example, assume an all-hazard, comprehensive emergency management (CEM) approach. Practically, this implies undertaking risk assessments and reduction measures as part

of planning for natural and technological hazards (O'Brien, O'Keefe, Rose & Wisner, 2006). Underpinning this approach is a top-down legislative requirement, with institutional responsibilities defined as well as financial resources allocated. Disaster planning is based on risk assessments and lessons learned which are then codified into emergency management plans designed to enable effective and efficient policies and practices (O'Brien, O'Keefe, Rose & Wisner, 2006). The institutions that perform these tasks are thus guided by and assume the positivist-reductionist approach which, as alluded to earlier, performs their tasks within the technocratic, bureaucratized framework. That is, they are legally-based, professionally staffed, well-funded and organized. Their ultimate aim of re-establishing conditions as they were prior to a disaster is based on the view that disasters are an isolated or a non-routine event (O'Brien, 2008; Smith 2004). As Hewitt (1983) opines, the precedence is given to 'technocracy' with a concomitant technocratic approach to social factors.

Within New Zealand, recognition 'grew' in that it was in the government's 'best interest' to minimize community disruption, maintain essential goods and services, and ensure continuity of community by encouraging mechanisms that foster resilience (Britton, 2007). As a consequence, the Civil Defence Emergency Management Act (2002) established the framework for building resilience within communities. That is, a proactive approach which, via the National CDEM strategy, a derivative of the Act, actively creates the conditions to incorporate and include community collaboration in reducing the risks faced and ultimately increase the ability of a community to bounce back (MCDEM, 2002).

Within the literature, many of the articles and studies on resilience focus on the theoretical aspect of how a community could absorb, adapt and recover from a disaster (Paton & Johnson 2001; Cutter et al., 2008; Norris, Stevens, Pfefferbaum, Wyche & Pfefferbaum, 2008). That is, these studies look 'ahead' as to what facets of the different (social, built, natural, economic) environments, contribute toward a resilient society. However, a limitation is that there is a dearth of studies that practically have used quantitative or qualitative methods to analyse how effective or applicable were these approaches, post-disaster. This is potentially due to the absence of metrics in facilitating this task as well as a 'fragmentation' of the research arena (Cannon & Muller-Mahn, 2010). A further possibility relates to the "limited theoretical understanding about resilience" (Mayunga, 2007; p. 1) or to the 'multifaceted' nature (physical, social, institutional,

economic and ecological dimensions) as posited by Cutter et al. (2008). The logical consequence of making the concept 'operational' therefore raises critical challenges. Indeed, Manyena (2006) highlights the concept of resilience as "gaining currency in the absence of philosophical dimensions and clarity of understanding, definition, substance, and most importantly, its applicability in disaster management" (p. 435). Criticisms have therefore labeled it as inappropriate, imprecise or glittery (Norris, Stevens, Pfefferbaum, Wyche & Pfefferbaum, 2008) with Pendall, Foster and Cowell (2010) describing the current resilience focus, as "trendy" (p. 72).

However, 'easier' to measure or quantify though, are 'elements of resilience' contained within the built, economic and natural environment. As an example, it is possible to measure how many businesses have 'bounced back' whilst also quantifying how many people are unemployed after a disaster and thus compare it with pre-disaster figures (Stevenson et al., 2011; Tierney, 2007; Alesch, Holly, Mittler & Nagy, 2001). Whilst it is laudable to plan for the unknown, many questions cannot be answered prior to a disaster. Chief amongst these would be the extent of the impact of the disaster agent upon a community as well as the 'ability' of that community to absorb and cope with the impact. As these challenges may be 'visible' post-disaster, it is also 'less difficult' to investigate what factors may affect a community or society with bouncing back. Thus, this study intends to comparatively analyze the recent earthquakes within Haiti and Christchurch with a particular focus on firstly, the different impacts upon these regions and secondly, what factors may affect them getting 'back on their feet again'.

Chapter 3: Methodology

Introduction

Central to qualitative research, is the position of the researcher, the instrument of data collection and subsequent analysis. This chapter initially introduces the limitations imposed upon this study with particular applicability to Christchurch. The focus then shifts from the theoretical underpinning to case study, the methodology employed within this research. The selection of documents as well as the related thematic analysis of such is thereafter described. Thus, the methods employed as well as the analysis are the selected means to answer the question that is central to this study:

“What factors affect Haiti and Christchurch with bouncing back from a disaster?”

Limitations

In the immediate aftermath of the February earthquake, a moratorium on social research was imposed by the National Disaster Controller (Crothers, 2011). Thus, all research not directly ‘supporting’ the response effort or the transition from response to recovery was requested to be put on hold. The ethics surrounding this request was to respect the needs and sensitivities of the local population and thereby minimize the impacts of research activities. As a result of this request and the subsequent observing of it, limited literature and associated data was available upon which analysis could be undertaken. However, due to the ‘unfolding’ nature of events, and particularly applicable to disaster studies, further data became available as the study progressed. Thus, the method employed within this study, document analysis, is somewhat fortuitous in that, had interviews been the principal means of gathering data, it is highly likely that it would have had a greater impact upon this study. For the purposes of this study, a further feature in relation to the Christchurch earthquake is that as opposed to ‘retrospection’ on the factors that affected Haiti, this study looks ‘forward’ as to the factors that affect Christchurch in bouncing back.

On a personal note, conducting this research invariably ‘created’ or revealed a certain tension within myself. As my personal disposition tends toward a philosophical ‘leaning’, this study in some ways is reflective of this ‘orientation’. As a researcher, I also acknowledge that I cannot free myself from theoretical or epistemological ‘commitments’ and that, this influences my research ‘approach’.

Theoretical underpinning

A distinguishing feature of naturalistic, qualitative enquiry in contrast to quantitative research methods revolves around the measuring instrument. Quantitative methods engage in a deductive approach utilizing ‘inanimate’ instruments such as questionnaires, surveys and tests, whereas with qualitative enquiry, the researcher is the instrument for data collection and analysis (Guba & Lincoln, 1981; Patton, 2002; Jones, 2002; Merriam, 2009). Crucially, the credibility of qualitative methods hinges to a large extent upon the skill, competence and rigour of the person conducting the research i.e. the researcher. Merriam (2009) adds that these factors are notwithstanding potential ‘personal’ issues which have the potential to exert a degree of influence on the researcher. However, due to varying levels of skill, training and experience between the “instruments”, Guba and Lincoln (1981) add that this lack of rigour is more than compensated by the flexibility, insight and ability to build upon the tacit knowledge of the researcher.

In selecting a research strategy, Blaikie (2010) argues that the principal aim is to achieve the best procedure for addressing the research problem and particularly for “answering the research questions formulated to deal with it” (p. 107). Although research questions can be answered by employing more than one research strategy, this particular study has employed the case study methodology in exploring the phenomenon under study. That is, this study was undertaken to shed light on the ‘natural disasters’ within Haiti and Christchurch. By adopting a resilience lens, the focus is therefore placed on providing insight as to what factors facilitated or hindered both regions from bouncing back or ‘effectively recovering’. As the underlying assumption is that this ‘bouncing back’ process can be ‘lengthy’ and is dependent on a number of pre-disaster variables, it naturally follows that this case study attempts to portray both short and longer-term factors that may impact this process.

Case Study overview

There is generally considered, no accepted definition of case study. Indeed, Swanborn (2010) highlights the many traditions out of which case studies emanate, as the source of ‘confusion’. Thus, in seeking to distinguish what is a case study, many authors compare it with other social research strategies. As an example, Gomm, Hammersley and Foster (2000) indicate that the case study is employed to identify a specific form of inquiry which notably contrasts on several

dimensions with the popular research methods of social survey and the experiment. Chief amongst these differences is the number of cases investigated as well as the amount of detailed information collected. Further differences include direct control over variables, the 'creation' of cases to be studied as well as the kind of data; the way they are analyzed and how inferences are drawn. In contrast, the case study aims to capture cases in their uniqueness, coupled with the collection of unstructured data as well as a qualitative analysis of this data. The aim is therefore to understand the case itself rather than generalize to a whole population.

Consistent with this historical background, Blaikie (2010), points to the case study as a type of research design as well as a method of selecting data (p.186). Stake (2005) argues that case study is not a methodological choice but rather a choice of what is to be studied. Thus, pivotal to case study is the interest in individual cases and not the method of inquiry used. As a consequence, Stake (2005) concludes that a case study is both a process of inquiry about the case, as well as the product of that inquiry (p. 436). Merriam (2009), in attempting to 'illuminate' the debate, contends that this 'confusion' rather centres upon the process of conducting a case study being 'synthesized' with both the unit of study (the case) as well as the product of the study. It is however possible to describe case study research by listing its characteristics, strengths and weaknesses. This implies that when a researcher selects case study as the research strategy to be employed, the strengths of this approach are considered as important with the weaknesses accepted as method-related limitations of the research (Cavaye, 1996; Gerring, 2004; Swanborn, 2010).

Eisenhardt (1989) extrapolates that the case study is a research strategy which focuses on understanding the dynamics present within single settings with Swanborn (2010) adding that it is useful for answering the "how", "what" and "why" questions. A single defining feature of case study is that it is a 'bounded system', a single entity or a 'unit' around which there are boundaries or as Miles and Huberman (1994) present it as "a phenomenon of some sort occurring in a bounded context" (p. 25). Simons (2009) underscores the primary reason for undertaking case study is to explore [and capture] the particularity, the uniqueness of the single case or as she paraphrases it, the "instance in action" (p.4). This study utilizes the approach taken by Yin (2009) who states that "A case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between

phenomenon and context are not clearly evident” (p. 18). Within this study and particularly relevant to Haiti, this translates into an empirical enquiry investigating resilience issues within disaster-affected regions.

Due to the absolute scarcity of studies focusing on utilizing a resilience lens to ‘frame’ communities bouncing back from a disaster, a descriptive research strategy was selected for this study. This is consistent with Eisenhardt’s (1989) contention that this approach has merit when not much is known about a particular phenomenon being researched (de Graaf & Huberts, 2008). Thus, the aim is to construct and ultimately produce ‘cases’ which Dooley described as

“descriptive rich documents.....based on real-life situation or event. Moreover, it [the cases] attempts to convey a balanced, multidimensional representation of the context, participants and reality of the situation” (Dooley, 2002; p. 337).

Present study

This study utilizes the case study as a form of qualitative enquiry. Distinctive aspects pertinent to this methodology, as elucidated by Merriam (2009), include features of particularistic, descriptive and heuristic. She furthermore lists the common characteristics between case study and qualitative enquiry, as the searching for meaning and understanding, the researcher as the primary instrument of data collection and analysis, an inductive investigative strategy and the end product being richly descriptive (p. 39).

With qualitative case study, particularistic implies that the case study focuses on a particular situation, event or phenomenon with the case being of importance for what it reveals about the phenomenon under study. Descriptive, means that the result of a case study produces what is termed a ‘thick description’ of the phenomenon under study. Thick description, a term derived from anthropology refers to the complete literal description of the entity/situation under investigation. Patton (2002) argues that description should stop short of becoming ‘trivial or mundane’. That is, the “substantially significant” with ‘ample detail’ should be adequate to illuminate and make the case (p. 503). Thick description is rendered possible within a case study due to the inherent flexibility and in-depth analysis which is facilitated by this approach (Merriam, 2009). Heuristic implies that case studies illuminate the reader’s understanding of the phenomenon under study, a process which encompasses the discovery of new meaning,

broadening the reader's experience or simply confirming what is known. Stake (2000) refers to this process as "naturalistic generalization" in that case studies illuminate our understanding of an experience whereby an existing generalization is reinforced, modified or "exploded into incomprehensibility" as a result of a case study process. As a consequence of naturalistic generalization, the emphasis is therefore placed on the reader of the case study report as opposed to the researcher in determining whether the descriptions or findings are applicable to similar/other cases with which they are familiar (Gomm, Hammersley & Foster, 2000).

With particular applicability to this study, the disasters in Haiti and Christchurch provide a 'classic opportunity' to assess the 'processes' of resilience and its associated features. By producing two comparative cases, the reader can then gain an insight as to what unique or common factors affect either region. McEntire and Mathis (2007, p. 25) point to the comparative method as providing an "opportunity" for advancing knowledge about disasters and emergency management particularly when applied to developed and developing nations as it facilitates alternate explanations for vulnerability and concomitantly resilience. They add that researchers must "fully recognize the value of comparison and do more to apply this method". They continue that effective utilization of a case-comparison has the potential to "enable understanding of the deadly, destructive events we call disasters" as it provides insight to the common and divergent issues faced by the affected regions.

Consistent with the aims of this study, an initial 'within-case' analysis (chapters 4 and 5) was undertaken which resulted in a detailed write-up of each particular case. According to Rowden (1995), these 'write-ups' are normally descriptive but they are central to the generation of insight (p. 359). Thereafter, a comparative cross-case analysis (chapter 6) was undertaken in order to reveal similarities and differences between the Haiti and Christchurch (Patton, 2002; Merriam 2009).

Documentary method

This study utilized documents as the chief source of data and concomitantly, analysis. Both Stake (1995) and Yin (2009) allude to the 'natural congruency' between document analysis and case study. Historically, document analysis has served mostly as a complement to other research methods, particularly for data triangulation, thereby establishing credibility and reducing bias

(Patton, 2002; Miller and Alvarado, 2005). However, Bowen (2009) highlights numerous studies that employ document analysis as a 'stand alone' method particularly relevant to historical and cross-cultural research. Indeed, within disaster research, utilizing documents as the chief source of data is neither unusual nor uncommon. With roots embedded in Prince's renowned doctoral dissertation (1920) which examined the Halifax shipping explosion, document analysis has contributed extensively to the disaster research discipline (Drabek & McEntire, 2003). Other examples such as Porforiev's (1996) study of the Sakahalin earthquake, utilized official reports and publications to describe the social effects as well as the pattern of organizational response.

Scott (1990) describes documents as an "artifact that has at its central feature an inscribed text" with the text being "the central and most obvious feature of a document" (p. 5). Documents and their increasing availability, as May (2001) illustrates, "constitute particular readings of social events" (p. 176). He adds that "documents can tell us about the way events are constructed, the reasons employed, as well as providing material upon which to base further research investigations" (p. 175). In other words, they provide an important source of data for understanding events, processes and transformations within society. Miller and Alvarado (2005), point to documents as a type of 'formal communication' thereby revealing the competence and specialized knowledge of the producers. They add that the form and content of documents conform to clear rules and are furthermore produced in ways that draw on and relate to others (i.e. intertextuality). As a consequence therefore, "the ways in which documents are used, is clearly a methodological and theoretical question" (May 2001, p. 177).

The 'neglect' of documentary research methods with 'active' tools such as surveys, questionnaires and direct observation in producing data that specifically addresses the research question, has been raised by McCulloch (2004). Furthermore, 'source criticism' (Miller & Alvarado, 2005), is registered as a concern when undertaking this method. Thus, procedures pertaining to internal criticism or document reliability, as well as external criticism or validity must be addressed during this process (Berg, 2001).

Conversely, the advantage of using documents, in contrast to questionnaires is that they offer an 'unobtrusive approach' in that firstly, they are not produced specifically for the research at hand. Therefore they are non-reactive. Secondly, the presence of documents does not 'intrude' upon or

alter the setting in ways that the presence of an investigator often does. Thirdly, documents are not dependent upon the mood of participants whose co-operation is essential through interviews and observations (Merriam, 2009). Numerous authors allude to similar general principles in utilizing documentary material when compared with interviews or observations (Scott, 1990; McCulloch, 2004; Merriam, 2009). However, the specific features of documents entail the application of particular techniques of selection, which are necessary to handle them. It is these procedures undertaken within this study, which specifically address the internal and external criticisms listed above.

Document selection

Unique to areas impacted by disasters within the developing world, is the presence of recognized non-governmental organizations (NGO's) or international organizations such as the United Nations, World Bank or International Monetary Fund (IMF). In fact, Collins, (2009) goes so far as to point out that NGO's are increasingly becoming the "implementers of government policy in developing world areas" (p. 40). A prime example of NGO's as 'catalysts or enablers of local transformation' is highlighted by Boyd, Osbahr, Ericksen, Tompkins, Lemos and Miller (2008). Within their research, they describe the workings of a collaborative program, undertaken in Mozambique which is geared toward the development of 'resilient livelihoods' to drought, food insecurity and poverty. With particular relevance to Haiti, Oxfam (2011) as well as World Vision (2011) 'boast' of at least a 30 year period of collaboration and program implementation. Concomitantly, issues of accountability and 'rigorous monitoring' are stringently applied to these organizations.

Within Haiti, these organizations have pre-disaster, been involved in activities related to sustainability and development programs. So much so, that Haiti is euphemistically known as "La Republique des ONGs" – the NGO Republic (Fatton, 2011). Therefore, in many aspects, they are strategically placed to identify, document and seek solutions to engage or cope with resilience issues. For this study, purposeful sampling procedure was performed aimed at eliciting data that would illuminate the 'bounded systems' under study. That is, relevant documentation from recognized NGO's such as World Vision, Oxfam, IFRC as well as the World Bank and IMF were accessed as potential sources of data for Haiti. This is based on the observation that

the central participants within the disaster management field are governments, the media and NGO's (Baker, 2009).

For Christchurch, documents were selected from the NZ Society of earthquake engineers (NZSEE), as well as organizations within the 'Natural Hazards' research platform, established by the government in order to facilitate collaboration between research providers and end-users within the natural hazards arena (Crothers, 2011). This platform is led by GNS Science and includes NIWA, Opus [consultants] as well as the universities of Auckland, Canterbury and Massey. One of the specific areas of focus for this programme includes researching community, organizational and infrastructural resilience to natural hazard events. Furthermore, the *Resilient Organizations (Resorgs)* research group represents a synthesis of engineering disciplines and business leadership whose ultimate aim is to transform organizations within New Zealand into those that survive major events and thrive in the aftermath (Resorgs, 2011). Other documentation from The Office of the Prime Minister, local and central government agencies as well as journalistic sources were accessed as possible data sources. As the local NGO's participated in a limited secondary role, minimal relevant documentation was thus produced by these agencies unlike their primary role within Haiti. Documents related to pre-quake vulnerabilities were sourced from the Earthquake Commission (EQC).

Table 2: Example of selected documents

<i>Organization/Author</i>	<i>Title of document</i>
World vision (2011)	One year on: Haiti earthquake response
Oxfam (2011)	From relief to recovery. Supporting good governance in post-earthquake Haiti
Oxfam (2010)	Haiti: A Once in a Century Chance for Change
Oxfam (2009)	Haiti – ‘A gathering storm’
IFRC (2011)	One-year progress report
IFRC (2010)	Haiti from tragedy to opportunity
Resorgs (2011)	Preliminary observations of the impacts the 22 Feb. ChCh, earthquake on organizations and the economy
Gluckman (2011)	The psychosocial consequences of the Canterbury earthquakes
Johnston et al. (2011)	Elements of an effective recovery process
Yamada, Orense & Cubrinovski (2011)	Geotechnical damage due to 2011 Christchurch earthquake

Within this study, assessing the quality and applicability of documentary evidence available for analysis entailed the application of the four criteria elucidated by Scott (1990).

- Authenticity
- Credibility
- Representativeness
- Meaning

Authenticity, being a fundamental step in this process, refers to the ‘soundness’ of a document. This means, as Scott (1990) suggests, determining whether the “evidence is genuine and of unquestionable origin” (p. 6). A basis for judgment of the authenticity of the document can only occur when one is satisfied that it is technically possible that the document is genuine. This process involves establishing and verifying criteria such as the authorship, the place and date of writing of the document (McCulloch, 2004). In a somewhat ‘circular reasoning’ process, May (2001) contends that ‘inauthentic’ documents could be of interest as it ‘cannot be fully and correctly understood unless one knows that it is not authentic’.

Credibility “refers to the extent to which the evidence is undistorted and sincere, free from error and evasion” (Scott, 1990, p. 7). Thus, issues of bias and trust ultimately point to whether the information can be relied upon. Unless there are overwhelming reasons to trust the sincerity of the information contained within the documents, Scott advocates a position of ‘methodical distrust’. The issue of sincerity therefore revolves around whether the author ‘believed’ what they recorded. Therefore, questions referring to the reliability of the transcriber/s as well as the accuracy of their observations and records need to be considered. A potential means of overcoming issues of sincerity and trust entails utilizing a broad range of documents which represent different viewpoints and interests. This process represents a type of ‘data triangulation’ through which truth and accuracy will emerge by ‘testing’ various documents against each other (McCulloch, 2004).

Representativeness pertains to the condition of ‘typicality’. That is, whether the consulted documents are representative of the totality of relevant documents (Scott, 1990; p. 24). This is not to suggest that the researcher always utilizes documents that display this characteristic. Rather, Scott (1990) reinforces that typicality is not always necessary but insists that the researcher needs to understand how typical is the available evidence in order to be able to assign limits to the application of any conclusions that are drawn from it.

The ultimate purpose of examining documentary sources is to arrive at an understanding of the meaning and particularly applicable to this study, the significance of what the document contains. Thus the process of ‘meaning,’ involves ensuring that the evidence is clear and comprehensible to the researcher: what it is and what does it tell us (Scott, 1990, p. 8)? Problems

surrounding meaning occurs at two levels, namely literal or face-value meaning from which the document's real significance must be reconstructed or an interpretive understanding wherein the researcher conveys the literal meaning to the contexts in which the documents were produced in order to assess the meanings of the text as a whole.

Data analysis

Many approaches including hermeneutics, critical and discourse analysis have been developed in order to determine the deeper meaning of the text contained within documents. However, as this study is descriptive, it assumes an approach that utilizes documents as illustrative of greater processes 'at play'. That is, by undertaking a thematic analysis, this study identified themes upon which a description of the underlying factors pertaining to both Christchurch and Haiti were exposed.

Braun and Clarke (2006) define thematic analysis as a method for identifying, analyzing and reporting patterns within data which are important in relation to the research question. Within this study, analysis of the data was informed by the view expressed by Braun and Clarke (2006) whereby, the 'keyness' of a theme was that it "captures something important in relation to the overall question" (p.10). Thus, central to the 'judgment' as to what constitutes a theme, rests upon the interpretive position of the researcher. Boyatzis (1998, p. vii) described a theme as:

".....a pattern found in the information.....that describes and organizes possible information or.....interprets aspects of the phenomenon. A theme may be identified at the manifest level (directly observable in the information) or at the latent level (underlying the phenomenon).

In terms of theme development, Boyatzis (1998) posits that there are essentially three 'routes', either theory-driven, prior data or prior research driven, or inductive (p. 37). As this study was theory driven, the data was approached with specific questions 'in mind,' with coding aimed at 'identifying' particular features of the data (Braun & Clarke, 2006). Bauer (2000; quoted in Joffe & Yardley, 2004) cautions against undertaking a "purely inductive approach" where the researcher codes whatever they observe (p. 59). Rather, he contends that codes should develop in response to the questions one seeks to answer. Within this study, a 'hybrid' (combined) technique of inductive and deductive coding occurred. The difference between inductive and deductive coding is that within inductive coding, emergent themes were 'generated' from the raw data. Within the coding process, codes were assigned to elements in the data that were 'of

interest' (responsive) to the research questions with a good code, described by Boyatzis (1998) is one that captures the qualitative 'richness' of the phenomenon. The codes were then 'grouped together' or 'sorted' into potential themes. Within the deductive process, codes were 'assigned' to categories within the theoretical framework, the SEBN model (Joffe & Yardley, 2004; Boyatzis, 1998). This process entailed identifying themes within the data which were applicable to categories in the Social, Economic, Built and Natural environment and hence, responsive to the research question. Within the overall coding process, manual coding occurred by utilizing a simple worksheet in order to record and keep track of the applicable codes and relevant themes. These themes were then contrasted with each other and assigned descriptive names.

As posited earlier, The SEBN model closely correlates with the "Composite indicators for community resilience" proposed by Cutter, Burton and Emrich (2010) as well as the "Characteristics of a Resilient Community" as described by Twigg (2007). Further consistency with the SEBN framework is found within the University of Tulane's (2011) study which focused on Haiti, post-disaster (p. 9). However, Glaser and Strauss (1967, quoted in Merriam 2009), cautions that "merely selecting data for a category that has been established..... tends to hinder the generation of new categories because the effort is not on generation but data selection" (p.185) However, as this study was 'driven' by a particular framework, the 'applied' categories were also responsive to the research questions and therefore not detracting from the study.

Chapter4: Haiti

“tout ayiti kraze” – the whole country is no more

Background

From viewing the extra-ordinarily high levels of destruction in Haiti, where does one begin to analyse the factors that affect this nation in bouncing back from this disaster? Are these features located in the ‘here and now’ or are they rooted in Haiti’s distant past? With a heavily centralized system of governance as well as economic geography, it would not be out of place to suggest that Port-au-Prince is Haiti and Haiti is Port-au-Prince. Indeed, 70% of Haiti’s GDP is generated within the Port-au-Prince region (Ferris, 2010). Hence, the overt link that destruction within the capital city directly translates to broader ramifications for the country as a whole. This view would indeed be unfair to a nation that historically, has had its moments of initial triumph but largely overshadowed by the bitterness that invariably accompanies tragedy. Indeed, Haiti became the second nation within the Western hemisphere and moreover, the first modern state governed by people of African descent when it declared independence on January 1, 1804 (Oxfam, 2011, Pierre-Louis, 2011). However, subsequent weakening of governance structures by internal and external forces has culminated in the social construction of a disaster, as occurred on January 12, 2010 (Bellegarde-Smith, 2011).

It is this declining influence of the state that in many ways shapes this current tragedy as it is ultimately the primary institution which has the responsibility to devise and enforce legislation that prepares a country for a disaster (World Vision, 2011). Beckett (2010) adds that the state is the only ‘actor’ that has the required legitimacy to make the transition from a disaster state to national reconstruction. However, due to the influence of the NGO’s within Haiti and their designated ‘mandate’, it could be argued that ‘failed development’ contributed to this disaster. That is, within the ‘NGO Republic’, the inability to reduce vulnerabilities and effectively promote sustainable development, are vital aspects of this social construction of disaster (IFRC, 2010). Historically though, Haiti has had previous experience with cataclysmic earthquakes, namely in 1751 and 1770, around the Port-au-Prince region. In 1842, another earthquake impacted the whole country, ultimately culminating in legislation surrounding new construction through improved building codes (Bellegarde-Smith, 2011). However, within the greater scheme of

Haiti's tumultuous history especially within the political and economic arena, enforcing these building codes, invariably assumed a lesser priority.

In learning to cope with a history of political instability and under-development, Haiti has subsequently been recognized by the World Bank (2006) as “a resilient society whose communities in particular have developed coping mechanisms” as highlighted by “The country's religious, cultural and artistic life is highly diverse and vibrant” (p. i). However, in identifying Haiti as a ‘fragile state’, the World Bank (2007) cautions that it is also beset by widespread poverty and inequality, economic decline and unemployment, poor governance and violence (Verner & Egset, 2007). It is against this backdrop that the current disaster unfolded.

The ‘Event’

Whilst the catastrophic consequences mainly centered on the Port-au-Prince area, the towns of Leogane, Carrefour and Jacmel, were impacted to a lesser extent. The rest of the country was left virtually unscathed. Unlike many other countries though, these untouched regions were ‘strikingly incapable’ of offering any relief to the devastated areas (Fatton, 2011). How could this be, that a country of 10 million inhabitants could not assist their fellow citizens at a time of extreme need?

The onomatopoeic ‘*Goudougoudou*’ or the ‘Event’ as labeled by the locals, struck on the 12 January 2010, leaving a trail of destruction in its wake (Bellegarde-Smith, 2010). The magnitude 7, 7 earthquake, amplified by surface seismic waves spreading across soft sedimentary plains, contributed significantly to the damage (Bilham, 2010). For a country used to constant hardships either of an anthropocentric, geophysical or meteorological origin, this ‘Event’ in terms of its human and physical cost, exponentially eclipsed what has gone before (IFRC, 2010). In contrast to the Indian Ocean tsunami (2004) where damage and casualties were dispersed across many regions, this earthquake offered Haiti no such reprieve. The “savagery of nature” (IFRC, 2010, p. 5) impacting upon an already vulnerable and poverty-stricken population was more than a ‘recipe for disaster’. Casualty figures read like a war-zone; approximately 230 000 dead, over 2 million internally displaced person's requiring shelter, another 600 000 living with host families with an overall figure of 3 million being affected by the earthquake (USAID, 2010). On the flip-side of the coin and re-enforcing the enormity of the impact, the International Federation of Red

Cross and Red Crescent (IFRC) indicate that ‘the Haitian earthquake operation’ has been the largest single country response in their history (IFRC, 2011). Any country, whether LDC or MDC would struggle to contend with such calamity. What sets Haiti apart from most countries on earth as a source of hope and at the same time, a source of despair?

Prior to the earthquake, Haiti was experiencing a ‘modest’ economic growth. In fact, the upward trajectory, supported by five consistent years of fiscal growth, was sufficiently enough to warrant the label “dynamism” (Oxfam, 2010, p. 1). Tentative political stability as well as an accompanying improved security partly due to the presence of the UN Stabilization Mission in Haiti (MINUSTAH), paved the way for democratic politics to be realized. On the basis of the establishing of these fundamentals, the stage was set for the launching of an increased economic development (Collier, 2009). However, events beyond the immediate scope of the Haitian government, dealt a fatal blow to this ‘pathway of promise’. In 2008, rocketing world food prices led to riots which directly caused the downfall of the government. Secondly, nature building on existing social conditions, struck. The names, Fay, Gustav, Hanna and Ike, are synonymous with the consecutive tropical storms and hurricanes which impacted heavily on this mountainous region. With little respite in-between these meteorological and hydrological events, an already vulnerable population, had to contend with floods and the associated damage (Oxfam, 2009). Aggravating the vulnerability and offering no natural protection to the populace, deforested lands exacerbated the impact.

It is estimated that between 1990 and the year 2000, deforestation led to an astonishing 44% depreciation of Haiti’s total forest cover (Oxfam, 2009). Currently, less than 2% remains. In contrast, Haiti’s neighbor, the Dominican Republic has a greater forest cover and concomitantly suffers less from the impacts of natural hazards. Deforestation sets off a chain reaction impacting not only on disasters, but extending to agricultural practices as well. At the heart of deforestation, land tenure and the harvesting of trees for firewood and charcoal, have been implicated (Dolisca, McDaniel, Teeter & Jolly, 2007). The selling of charcoal, which is the chief source of fuel within Haiti, is the only means of subsistence for many residents within the rural sector.

Forests serve as wind-breakers, forming natural (bio) shields against tropical storms. Once they are lost, so goes the natural defence mechanism resulting directly in flooding and landslides.

Topsoil is further removed by the rain thus leading to soil that is less arable and ultimately unproductive for farming (Oxfam, 2009). Further erosion due to winds, drought and man-made factors, either deforestation or unplanned construction in urban areas, has led to a ‘desertification’ of the land. With over 60% of its land on slopes of varying gradients, water from the storms have a ‘natural ally’ in wreaking havoc on the population. Climate shocks therefore emerged as a fundamental driver in promoting a rural-urban exodus, ultimately culminating in over-crowded cities as happened in Port-au-Prince. This factor is not to downplay the economic centralization around the Port-au-Prince area as well as the decline of the agricultural sector (Crane et al. 2003). Many ‘shack-dwellers’ accordingly occupied poorly constructed dwellings on hillsides and other unstable land masses. Uncontrolled urbanization, underpinned by a lack of zoning regulations or urban planning, dotted the Port-au-Prince landscape. Thus, environmental degradation was instrumental in facilitating a ‘vicious cycle’ which ultimately contributed significantly to the catastrophe of January 12, 2010.

Post-disaster however, a reverse migration process occurred whereby many citizens fled the confines of the devastated cities and ‘escaped’ to the rural areas thus placing an “unprecedented level of strain” on rural households (World Vision, 2011). Therefore, the services that were offered to citizens within the affected areas had to be extended to these rural areas, further exacerbating a ‘stretched’ logistical network (Red Cross, 2011).

Aside from the horrific number of fatalities and injuries, was the pressing need to shelter more than 1, 3 million citizens who were left homeless. Logistically, this difficult undertaking could have been achieved utilizing local resources, supplemented by outside ‘expertise’ which began arriving soon after the quake struck (IFRC, 2010, World Vision, 2011). Beside the absence of local strategic leadership, two major hurdles had to be overcome including the lack of a clear recovery ‘master plan’ to guide this process. Of greater relevance though, lay Haiti’s complicated land tenure system which had earlier been identified as an urgent problem hindering the nation’s development (Smucker, White & Bannister, 2002). Land tenure, as defined by Reale and Handmer (2010), refers to the “terms and conditions on which land is held, used and transacted, with a particular system of rights and institutions that govern access to and use of land” (p. 161). In exploring how disasters exacerbate insecure land tenure, Reale and Handmer (2010) have further identified five ‘mediating factors’ as impacting upon tenure security,

namely: Local legal system, Government administrative authority, Economy, Evidence of tenure and Custom and dominant social attitudes (p. 165). Within Haiti, a combination, if not all of these factors contributed to the complex arrangements surrounding land tenure.

Post-earthquake, this unresolved land tenure issue provided a stumbling block for accessing suitable land on which to construct short and long-term shelter. As a consequence, the authorities were faced with a lack of clarity as to who had title to particular pieces of land. Thus, plans to build shelters were seriously impacted with attempts to acquire sufficient amounts of suitable property, taking longer than anticipated. Successes could only be achieved after protracted negotiation and collaboration with local authorities to temporarily solve long-standing land disputes (Oxfam, 2011). Furthermore, intransigence by landowners refused permission for construction on their property, based on fears that the displaced would settle permanently. Thus, the scarcity of suitable land as well as access can be traced to a system rooted in historic processes and underpinned by poor governance (IFRC, 2011).

Whether this impasse had occurred as a result of a dysfunctional civil land system or been generated by it, remains a matter of debate. Historically, this complex and informal arrangement culminated in most landowners not having title deeds to their property. Within the ‘informal framework’, land was bought and sold without updating title. The absence of a land register or registry records simply contributed another piece to the land tenure jigsaw (Smucker, White and Bannister, 2002). Consistent with the historic dualism within Haitian society, land tenure arrangements were distinguished by two parallel systems operating – one statutory (legal) and the other customary. Practically, these systems, rather than being discrete, are interactive and thus constitute a ‘legal pluralism’. Smucker, White and Bannister (2002) add that most land transactions displayed an aversion to the legal process and state officialdom. This was possibly reflective of the prohibitive costs involved and more accurately, an awareness of corrupt practices and equally dishonest officials including the judiciary. Furthermore, the FAO/INARA study (1997) which assessed the formal land tenure system, concluded that the judicial system was incapable of guaranteeing land tenure security and in fact, the system actually generated conflict and insecurity.

Although being aware of the legal obligations, studies showed that more than 95% of land sales in rural Haiti avoided the formalities necessitated by Haitian law. Primary reliance for these transactions is centred on social relations as opposed to legal categories based on title or lease contracts. As this land tenure system is so embedded within Haitian society, a long-term challenge thus entails the establishment of a national land registry whose task would be to list, update and classify land belonging to individuals and the state. As in many post-disaster contexts, negotiating these land issues will be a critical issue for Haiti to ‘bounce back’ (IFRC, 2010).

Seismologists examining the collapsed structures, point to a distinct lack of supervised construction over a significant period of time. Concomitantly, they issued quite a ‘strong indictment’ by stating:

“The buildings had been doomed during their construction. Every possible mistake was evident: brittle steel, coarse non-angular aggregate, weak cement mixed with dirty or salty sand, and the widespread termination of steel reinforcement rods at the joints between columns and floors of buildings where earthquake stresses are highest” (Bilham, 2010, p. 878).

This assessment is equally indicative of the absence of building codes or construction quality inspection with officials acknowledging that less than 10-15% of building construction employed a design professional (IFRC, 2011). Structures that were erected were not adequately earthquake mitigated. The bulk of building materials had to be imported with local labour, generally unskilled. Due to the absence of urban planning or housing development, houses were constructed on steep or hazardous locations, amidst a densely populated environment.

It is estimated that more than 105 000 houses were destroyed with a further 208 000 damaged. The enormous volume of rubble generated was described as filling “enough dump trucks parked bumper to bumper to reach more than halfway around the globe” (Oxfam, 2011, p. 14). This volume of debris increased dramatically, if it was not dramatic enough after the initial quake, as unsafe buildings had to be demolished. Experiences gained from other earthquakes such as Kobe, Japan (1995) and Bam, Iran (2003), indicate the importance of rubble removal as a priority in order to stimulate reconstruction (Oxfam, 2011). However, within the Haitian context, many international donors have not contributed adequately to this undertaking and that systemized and mechanized

approaches have not been employed to any significant degree. Indicative of this short-coming, Oxfam (2011) indicate that one year later therefore, less than five percent of rubble has been cleared.

Significant damage to infrastructure invariably leads to associated damage and compromise to lifeline utilities since it is these lifelines that ‘enables’ society to function (MCDEM, 2002; Cutter, Mitchell & Scott, 2000). For Haiti, these lifelines, particularly the water and sanitation infrastructure were rudimentary prior to the earthquake. Issues of mismanagement, inadequate technical expertise and ultimately, a lack of resources contributed to an inefficient sector (Oxfam, 2011). However, efforts to build permanent water and sanitation facilities post-disaster were hampered by state indecision as to the permanent resettling of the displaced. Furthermore, land-owners were reluctant to allow sustainable facilities being erected on their property since they ‘feared’ a permanent population on their property. As a consequence of the health-risks associated with inadequate water and sanitation-related facilities, deadly outbreaks of cholera occurred (IFRC, 2010). Thus, issues of access to safe water and sanitation facilities were problematic in the immediate post-disaster phase as well as crucial for long-term sustainability (Oxfam, 2010).

The broader ramifications of water and sanitation-related issues, reflected challenges endemic to the health sector overall. This sector was placed under severe strain, not only due to the high number of earthquake casualties but also from a medical personnel perspective in that a number of senior staff including professors, doctors, nurses and nursing students were tragically killed (IFRC, 2011). In addition, treating disaster victims combined with psycho-social support, systemic pre-existing malnutrition, intertwined with an increased food-insecurity, all contributed to significant multi-faceted challenges within this sector (World Vision 2011; IFRC, 2011).

In demonstrating the cause-and-effect, the ‘knock on’ of economic impacts, the health sector serves as an example of this process at work. During the 1990’s as an example, trade liberalization demanded by the IMF and the USA had a disastrous effect upon Haitian rice farmers. This stipulation exposed them to inequitable competition from subsidized US farmers and ultimately led to a collapse of domestic food production (Oxfam, 2011; Fatton, 2011). Thus, from being a self-sustaining source of rice, Haiti had to rely on imported food ultimately

culminating in malnourishment and food insecurity. This trade liberalization added to internal issues of a weakened state, endemic corruption, gross inequality and other social issues including lack of employment opportunities that blighted the landscape of this nation.

Historically, ‘outside’ control is nothing new or unusual to Haiti though. This extends to contemporary donor practices which, whilst instituted in ‘good faith’, have contributed to undermining the Haitian state (Oxfam, 2011; Collier, 2009). In fact, Joel Boutroué, a presidential advisor, recently claimed that extremely limited co-operation exists between the Haitian government and the international community and that a ‘climate of mistrust’ is evident between the parties (Birkmann, 2011). Conversely, the Multi-Donor Trust Fund (MDTF) is still viewed as a punitive mechanism, imposing foreign will and controlling the development of Haiti (Oxfam, 2011).

From once being known as “la Perle des Antilles” meaning ‘jewel of the Caribbean’, Haiti has since its independence, been the subject of foreign intervention through various means (Pierre-Louis, 2011). In 1825, France demanded reparation for ‘lost earnings’ as a result of Haitian independence. The indemnity of 150 million francs (equivalent to \$21 billion today) was eventually paid in 1947, utilizing money collected from taxes and trade. It is argued that this state revenue could have been invested in infrastructure such as roads and schools as well as developing Haiti’s economy (Pierre-Louis, 2011). American economic sanctions and occupation and the broader ramifications thereof, occurred on at least three occasions. Thus, over the last two centuries, a destabilized society underpinned by constant revolution, military coups, social and political instability, became the norm.

However, it is around the year 1957 that the narrative takes a sinister turn with the ascension of Francois Duvalier and subsequently his son, Jean Claude (Baby Doc) in 1971, to the office of president. During this dictatorship period, ending in 1986 with the forced ousting of ‘Baby Doc’, catastrophic economic and social policies coupled with a mass exodus of skilled professionals occurred. The situation deteriorated to such an extent that Haiti had to depend upon foreign NGO’s to feed its people (Pierre-Louis, 2011). Politically, ineffective leadership and poor governance leading to endemic state corruption were observable remnants of this era. It is this corruption that aided and abetted many nefarious practices and consequently appears to be a

major hurdle in efforts to ‘bounce back.’ Inequality between the few ‘privileged elites’ who utilize the government to insulate their dominance within society versus the false populism which neglects the poor are also factors intimately inter-twined with the status quo (Verner & Egset, 2007).

With the political leadership unsteady at best, indecision and inability to articulate or communicate a vision for reconstruction, any attempts at leading a response to the current challenges were effectively thwarted. Furthermore, with corruption being both the cause and consequence of the weakness of the state, inefficiency is looming as a major obstacle. Weak governance has also been cited by Kahn (2005) as a ‘critical factor’, directly correlated to the number of deaths and levels of destruction experienced within a disaster. That is, states with stronger institutions generally experience fewer deaths after a ‘natural event’ than those with weak or ineffective institutions.

In order to facilitate and co-ordinate an effective bouncing back process, efforts within Haiti should meet three vital conditions:

- The government and state institutions must lead the process
- State accountability to the populace must be paramount
- Local residents must be given the information to make informed decisions

In other words, for the process to be legitimate, it must consist of Haitian ownership, leadership and engagement (Oxfam, 2011). This framework is consistent with the Elements of the Recovery Process (Rubin & Barbee, 2006) which effectively places ‘state leadership’, ‘ability to act’ and ‘knowledge of what to do’ as the central themes.

Exacerbating institutional weakness, the earthquake claimed the lives of more than 20% of the civil service with most government infrastructure including parliament, the presidential palace, courts of law as well as administration buildings, damaged or destroyed. A positive step toward the future is that this earthquake provided a ‘clean slate’ upon which to begin the rebuilding process. Perhaps, the tragic symbols highlighted by the physical and material representations of the state laying in ruins, is indicative of the need to ‘build back better’ (Beckett, 2010). This

symbolism extends to and culminates in the burying of 206 years of governmental and archival records (Bellegarde-Smith, 2011). The document entitled “Social Resilience and State fragility in Haiti” (Verner & Egset, 2007) in many ways, signifies the positive and negatives of the current situation in Haiti. The fact that many communities have developed coping mechanisms in response to the long history of under-development and political instability serve as a basis upon which to bounce back. It is this existing social capital, identified by Aldrich (2010) as the key factor in this process that provides the greatest promise for the future. Thus, A vision for the future underpinned by a coherent plan resulting in massive investment in infrastructure and work opportunities, provide an opportunity to create a more desirous and equitable future. Of course, this process would have to be transparent and driven by effective governance and leadership.

The ‘bouncing back’ process on the other hand, has also provided short-term benefits in that job opportunities were created for people who lost everything. Pre-disaster, self employment and money-transfer from abroad, were the major sources of income (University of Tulane, 2011). Cash-for-work programs provided immediate relief for many residents who had lost income, financial and social assets and jobs (IFRC, 2010). However, most of these projects are short-term and challenges remain as to stimulating long – term employment and ultimately rebuilding livelihoods (World Vision, 2011).

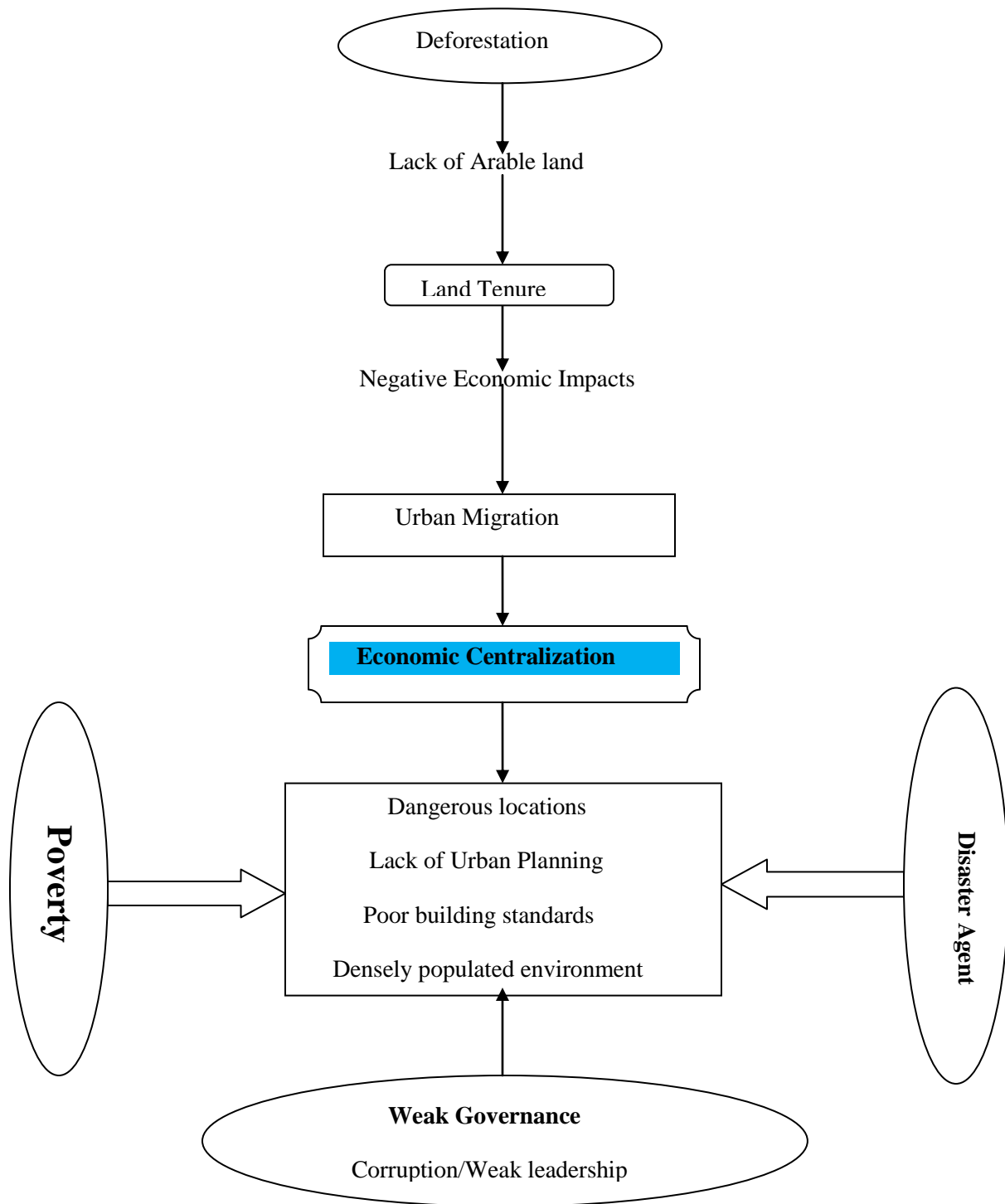


Figure 2: Haiti - Elements of a Social Construction of a disaster

Chapter 5: Christchurch

“Are there any plumbers here?”

Background

If the ‘law’ of precedence is a reliable indicator, then what would the implications for Christchurch have been? That, which states the past is the best indicator for the future, would surely have something significant to reveal based on the four large earthquakes experienced within the first 80 years of the recently-established City (Elder, McCahon & Yetton, 1991). Furthermore, earthquakes suffered in the years leading up to the February 22nd, 2011 quake, more than likely pointed to some date in the future. And so it came to pass. The 300 year event (average return period), admittedly, struck somewhat prematurely (Centre for Advanced Engineering, 1997; Elder, McCahon & Yetton, 1991). Not that there wasn’t any recent precedent, subsequently reinforced by numerous aftershocks between the two earthquakes. The ‘dress rehearsal’ of September 4th, 2010 however, possibly served to ‘blind-side’ the residents of the Canterbury region, in particular Christchurch into thinking that the ‘coast was clear’ in terms of ‘the big one’. A “miracle” proclaimed Prime Minister Key (AFP, 2011) with the country, by-and-large echoing the lucky escape due to negligible injuries and zero deaths albeit significant property, essentially liquefaction-related damage occurred. As opposed to the ‘savagery’ of nature, so visibly expressed within Haiti, another element of nature was revealed here in Christchurch. Thus the ‘fickleness’ of nature, reinforced the lack of human control over the environment.

The ‘Event’

A magnitude 6.3 earthquake struck the Canterbury region with an epicenter located approximately 10 km’s south east of Christchurch, New Zealand’s second largest city. This major quake, the second within a six month period, however had an immediately different outcome than its predecessor. Overall, the final death rate stands at 181 with injuries sustained to a significant number of inhabitants. With massive damage to commercial and private property, the estimated economic impact from both earthquakes is said to be in the region of \$15 billion (English, 2011). Had a proactive ‘resilience’ approach not been adopted by the local authorities, ranging from legislation to policy, public education and preparedness and finally concrete adaption measures, the outcome could potentially have been far worse (Matthews, 2011).

However, in light of the significant social, economic, physical and environmental damage sustained by Christchurch, many issues pose a potential problem in terms of bouncing back.

Geographically, Christchurch was not considered to be at high risk from an earthquake (Davey, 2011). That is, from a risk perspective, represented by the equation:

$$\textit{Risk} = \textit{likelihood} \times \textit{consequences}$$

and in light of other ‘high-risk’ cities such as Wellington, the overall probability remained low for a massive earthquake. No ‘active’ fault-lines had been mapped in the area, with the main risk being associated with the Alpine fault, 140 km’s to the northwest and on the other side of the Southern Alps (Davey, 2011). However, that an earthquake would occur in the unforeseen future had been established, thus the term ‘known unknowns’ would not seem out of place (Campbell, 2010). That two massive earthquakes occurred shattered this scientific and popular belief that other cities are more earthquake-prone. Disaster ‘myths’ can therefore be viewed as adding to a community’s vulnerability (Tierney, Bevc & Kuligowski, 2006). A “loss of trust in scientific information” has subsequently been proposed as a likely consequence (Gluckman, 2011, p. 1). Should this have been a surprise however, given that earlier studies indicated that Christchurch had an overall seismic hazard level on par with Wellington? Given that most of the city was built on predominantly swamp land which had been drained, this pre-existing vulnerability thus indicated potential disastrous consequences in the event of a seismic event (Yamada, Orense & Cubrinovski, 2011). Indeed, Elder, McCahon and Yetton, (1991) had described the city as being built on “relatively soft sediment” (p. 2) with a high groundwater table saturating these soils. Thus, the anticipated consequences and greatest concern in the event of an earthquake would be structural collapse and widespread liquefaction. And so it came to pass.

Building on existing physical damage sustained in the September 4th earthquake, a ‘recovering’ public experienced an event with a different character on a number of levels. Whilst the earlier quake was located 40 km’s away, the epicenter of the present quake was much closer to Christchurch with a depth of five km. Thus, this ‘close’ to the surface event produced peak ground acceleration (PGA) [measured as twice the acceleration due to gravity] with the geology of the area guiding the shockwaves towards the city of Christchurch (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011; IPENZ, 2011). Indeed, GNS scientists vividly portray

the overall impact as “.....it was equivalent to lifting the buildings and letting them go into freefall” (Matthews, 2011). Within the CBD, the PGA impacted on all buildings with the design specifications of the newer (earthquake-modified) buildings, exceeded by 50%. These dynamics, coupled with the pre-existing seismic vulnerabilities interspersed with earlier damage, indicated one outcome. And it wasn't entirely positive.

Within New Zealand, the earthquake-risk science is based around the identification and mapping of active fault traces (Davey, 2011). This process thereby forms the basis for a risk classification schema. In cognizance of the proneness of the countrywide susceptibility to a diverse range of natural hazards, reduction measures, underpinned by legislation are legal requirements, particularly applicable to the built environment (ODESC, 2007). Accordingly, the Resource Management Act (RMA, 1991), the Building Act (2004) and the Civil Defence and Emergency Management Act (CDEM, 2002) are the central pillars with regard to development and construction. As a consequence of these Acts, building codes, seismic strengthening of 'at-risk' buildings and designated zonal development are routine and stringently enforced. The Building Act (2004) for example, requires that the recognized authorities must not grant building consents on land subject to natural hazards unless they can be protected from the hazard. Furthermore, it requires that notices be publically displayed as to indicate the natural hazard exposure (Le Masurier, Rotimi & Wilkinson, 2006).

Particularly applicable to the damaged and collapsed buildings within Christchurch, Section 122 of the Act articulates the nature of an earthquake-prone building in relation to its construction as well as to the ground upon which it is constructed. Prior to the quake, the number of earthquake-prone buildings, defined as commercial buildings with less than 33% of the current loading standard, was listed as 7600 (IPENZ, 2011). Of this, 958 were built with unreinforced masonry (URM) and were expected to fail within a 'moderate' quake (Christchurch City Council, 2010). A further 490 heritage buildings were listed as earthquake prone. As anticipated, the physical vulnerability of the URM buildings was self-evident by their poor performance thus resulting in 40 deaths with the mortar found to be of a 'low quality' (Carville, 2011; Ingham, Biggs & Moon, 2011). It was however, the collapse of the newer buildings which contributed significantly to the high mortality rate. Whilst the overwhelming bulk of dead or injured resulted from partial or

total building collapse, decisions regarding future building construction as well as geographical location, may serve as the basis for future re-development.

Of great significance to the number of URM buildings, is the high percentage which is designated as heritage properties (Christchurch City Council, 2010). It is the pre-eminence of these cultural icons which add to the particular appeal of Christchurch as a tourist destination. These landmarks have become key treasures and a source of pride within the cultural domain, serving both locals and tourists alike. Aside from being the business hub of the South Island, Christchurch is also its cultural 'heart' (Ingham, Biggs & Moon, 2011). The crucial nature of culture and cultural icons as portrayed by Walker, Scott & Fry (2010) is that they occupy a crucial position within society and is therefore an important vehicle in attempting to bounce back from a disaster. They contend that culture forms part of an individual and community's sense of place and identity which, by way of example, was manifested by the fund-appeals churches and other 'community groups' had set up. Thus, the psycho-social implications of cultural and heritage destruction potentially has far-reaching implications for the long-term healing of a community. Important to New Zealand, is the recognition of Maori as *tangata whenua* (people of the land) who occupy a particular 'place' within the cultural landscape. This understanding does however create its own challenges in that Maori cultural treasures described as *nga taonga tuku iho nga tapuna* (treasures handed down by our ancestors), consist of tangible as well as intangible heritage places. The intangibles in particular, may display no overt features as to its significance and thereby may constitute a source of potential angst particularly if the land is required for redevelopment. Consequently, any attempts at a cultural 'restoration' must take cognizance of and include local iwi consultation and active participation (Historic Places Trust, 2011).

Initial estimates reveal that of the 1000 buildings designated as heritage properties, at least 50% have been severely damaged (Peek, 2011). Thus far, 152 heritage buildings have been demolished with many more reportedly in danger of a similar fate (CERA, 2011). Conflict however can arise when the value of cultural 'artifacts' and places are counter-balanced by perceived economic demands. It is this 'panic and haste' to demolish historical buildings that the heritage sector regards as the 'biggest enemy' (Donnell, 2011). Indeed, Graham and Spennemann (2006) highlight the threats to heritage 'objects' which have been demolished

without due consideration given to the consequences of such actions. However, whilst cognizance must be taken of relevant social factors and processes, economic demands are regarded as primarily the main driver of a rapid bouncing back (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011; Henderson, 2004). In fact, the United Nations Department of Humanitarian Affairs (UNDHA) has emphasized this approach by stressing that the impact of disasters be viewed primarily in economic terms and not solely in humanitarian or social terms (quoted in Henderson, 2004, p. 112).

Prior to the February quake, the economic indicators were grim with recovery occurring on two levels. This state was fuelled by the September quake followed by thousands of subsequent aftershocks as well as a global economic downturn, leaving many Christchurch businesses struggling. Due to the immense structural and infrastructural damage sustained within the CBD, a secure cordon was placed around this economic hub with as many as 6 000 businesses being disrupted (Steeman, 2011). Additionally, many buildings were 'red-tagged' (due for demolition) including buildings within the influential retail and tourist sector. As stated by Stevenson et al. (2011), a CBD is more than a collection of buildings and organizations. Rather, it is characterized by physical, economic, political and social networks that are constantly evolving and thereby occupy an important position within a society. Of a total resident population listed by Statistics NZ as 348,435 in the 2006 census, approximately 52 000 worked in or around the CBD (Stats NZ, 2011). Thus, restricted access of employees to their work-places combined with an unknown recovery process may add to the uncertain economic environment. Conversely, many businesses have faced closure directly contributing to rising unemployment levels. A case in point is the 195 workers from the Canterbury Spinners who lost their jobs due to company closure (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011).

Overall, the Canterbury region, with Christchurch as its hub, contributes approx.15% to New Zealand's GDP (Wood, 2011). It is therefore logical to assume that the broader economic ramifications will indeed affect New Zealand's economy overall. A survey conducted a few months after the quake implicitly highlighted these 'reverberations' by indicating that two-thirds of NZ businesses were affected by the quake. Furthermore, and of greater concern is that almost 20% of these businesses envisage long-term consequences ("Two-thirds", 2011). Additional complications for local businesses, is the limited availability of office space forcing owners to

relocate their premises to at-times, distant locations. Hence, issues of future viability are being considered by many businesses (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011). Based on the knowledge that gauging the direct and indirect economic impacts has generally been considered as ‘difficult’ to estimate, uncertainty surrounds the long-term effects especially in light of the current global volatility (Cochrane, 2004). Non-market related impacts, which extend to environmental, psychological and health effects may thus exert a greater influence within the economic domain (Johnston et al., 2011). Whilst these factors are not necessarily directly related to the bouncing back process, they nonetheless affect people, the most important resource within this process (MCDEM, 2005). With reduced visitor numbers, Christchurch as a tourist ‘magnet’ would need to recover rapidly, thus rekindling this income-generating industry. On a positive note though, the anticipated ‘building boom’ within the construction industry is expected to generate many jobs. To what extent this ‘anticipated boom, has a ‘trickle down’ effect to the local economy is uncertain due to many businesses losing their pre-quake resources. Overall though, the net impact of this earthquake is essentially negative mainly due to the destruction of valuable resources (Johnston et al. 2011).

Perhaps then, it is these economic uncertainties coupled with the collective trauma that has led to a mass exodus of Christchurch inhabitants including professionals as well as skilled workers. This type of migration is regarded as ‘standard’ within the context of a destructive event (Love, 2011). Initial estimates contend that as many as 70 000 (internally displaced) have ‘fled’ the city with this ‘social dislocation’ process described as the largest since the first settlers arrived (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011). This migration in part, is also driven by the schooling needs of thousands of ‘school-less’ pupils. Of those who have left, many sought refuge within other towns on the South Island, North Island as well as Australia (Love, 2011). Even though reconstruction efforts invariably lead to a number of job opportunities, it is not known as to what percentage of residents will return. This may lead to further economic pressures due to house and property price ‘volatility’ thereby creating a vicious cycle on an already traumatized population. Post-quake, the importance of a healthy recovering economy is that it should create ‘incentives’ for residents who otherwise may have fled the city and equally for new businesses to invest in a disaster area (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011).

As much as the resilience process may be driven by economic demands, the state is ultimately the central actor within this dynamic (Uyangoda, 2005, Berke & Campanella, 2006). Therefore, underpinning attempts at bouncing back especially within the built and economic environment, are the legislative processes and regulatory framework that form part of the ‘business as usual’ environment. Within NZ, the applicable bureaucratic process is linear and composed of a raft of local and National Act’s which ordinarily serve the purpose for which they were intended. The centrality of the bureaucratic process is that it can provide enabling or disabling conditions within the bouncing back process. However, this process can be lengthy, leaving residential property owners, particularly vulnerable (La Masurier, Rotimi & Wilkinson, 2006). Hyden, Court and Mease (2003) have defined bureaucracy as an arena that refers to “all state organizations engaged in formulating and implementing policy as well as in regulating and delivering services” (2003, p. 2). Furthermore, they place bureaucracy as one of the six ‘domains’ situated within the realm of governance (civil society, political society, government, bureaucracy, economic society and judiciary). Thus, the challenges that do arise are reflective of the conflict between the ‘emergent norms’ which transcend ‘bureaucratic norms’ within a disaster environment (Henderson, 2004).

In response to the ‘emergent norms’ evidenced post-disaster, a keen challenge would therefore entail the streamlining and easing of the political bureaucratic process, rendering a ‘fast track’ option a necessity. The ‘balancing act’ creates its own challenges between the economic, built and social environment in that the rebuilding processes must occur simultaneously (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011). As a mechanism for promoting and facilitating this bouncing back process, the government has therefore created the Canterbury Earthquake Recovery Authority (CERA) as a ‘one stop shop’ to co-ordinate and lead this process (CERA, 2011). In terms of its mandate, this agency has the authority to “relax, suspend or extend law and regulations to allow faster decision-making on key aspects of the rebuild” (Kay & Hartvelt, 2011). However, obtaining ‘fast-track’ building consent is contingent upon the availability of human resources to process these claims as well as the availability of resources within the construction industry. A further challenge entails the co-ordination and ensuring that building and lifeline standards are maintained (Seville et al. 2006). A paradox therefore exists in

that; a potential further layer of bureaucracy has been added in order to reduce the existing bureaucratic process.

Considering that reconstruction after a disaster ordinarily passes through five stages, an inevitable tension exists between the desire for an immediate response and the requirements endemic to the administrative process (Gluckman, 2011; Le Masurier, Rotimi & Wilkinson, 2006). What complicates this process is that complex decision-making has been shown to adversely impact upon the affected (Johnston et al. 2011). Therefore, whilst situating psychosocial challenges as directly attributable to factors associated with both earthquakes, the linkage with economic, administrative and communication issues cannot be minimized. That is, the complexities associated with the prevalent psychosocial issues, are intricately linked to the overall rebuilding context (Gluckman, 2011). Specifically though, as these events were essentially ‘depowering’ with individuals not having any control, central to any future action should entail the restoration of some degree of control to the individual. Disempowerment has been directly linked to reinforcing the initial trauma (Gluckman, 2011). A difficulty associated with the psychological bouncing back process is that there is no clear endpoint and that ‘progress’ is based upon the level of coping with lives and livelihoods, experienced by an individual. Thus, aggravating factors, particularly arising from the media and the political process, may play a significant role in fuelling these tensions. Indicative of the increasing stress levels issues such as escalating levels of domestic violence reported in Christchurch, are not unusual. Not to suggest that natural disaster are the cause of this spike, rather they have been shown to affect the frequency and severity and ultimately hinder the bouncing back process (Johnston et al, 2011).

Taking cognizance of the widespread liquefaction-related damage to houses and properties, the issue of land availability remains a crucial one. Whilst land-use planning pre-event, has been shown to positively impact upon the bouncing back process, insecure land tenure carries its own vulnerabilities (Glavovic, Saunders & Becker, 2010; Berke & Campanella, 2006). Disasters invariably succeed in exposing this particular vulnerability culminating in displacement, lost livelihood, and homelessness, loss of identity as well as inadequate housing (Reale and Handmer, 2010). Within ‘western, developed countries’ the criticality of land is highlighted as “the single most significant asset for the majority of people” (p.160). This has ramifications for

both businesses and private residence especially in a society where private property rights are held sacrosanct (Glavovic, Saunders & Becker, 2010). Historically, tension between local authorities and developers is not unknown in Christchurch. In many instances, developers filed lawsuits against the council in order to construct residential units on land, identified as liquefaction-prone and unsuitable for development (Booker & Gay, 2010). Thus, the question of land availability and the acquisition of such in order to facilitate and stimulate affordable development, particularly where land remediation is undesirable, has the potential to 'revisit' these earlier variances between the authorities and developers.

Christchurch, in many ways displayed the importance of credible leadership within a disaster. Testament to pre-planning, resource mobilization and supplemented by technical expertise, the effective co-ordination of the mammoth task was underpinned by the visible leadership. Thus, in contending with the impact and effects of this disaster, visionary leadership is mandatory in order to negotiate and alleviate the diverse challenges being confronted (Nakagawa & Shaw, 2004). In many ways, capable leadership is a crucial pivot in facilitating the bouncing back and ultimately recovery, process. However, issues of leadership should primarily be viewed within the context of New Zealand as an MDC. That is, institutional and economic strength enabled major economic and other resources being immediately and readily available to support and sustain the rescue and relief effort (Key, 2010). Contending with major building collapse, extensive rock-falls and landslips as well as wide-spread liquefaction, devastation appeared to consume the 'garden city'. Aside from the CBD, the Eastern suburbs of New Brighton, Mt. Pleasant, Bexley, Avonside and Dallington sustained the greatest impact (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011). Associated with the massive liquefaction, critical lifeline disruption especially water, electricity, roads, bridges and sewerage systems occurred on a large scale. It is the dependence on this critical infrastructure that rendered Christchurch, as in many Western cities, as particularly vulnerable (Cutter, Mitchell & Scott, 2000). Accordingly, these lifelines are viewed as the "networks that provide for the circulation of peoples, goods, services and information upon which health, safety, comfort and economic activity depend" (Platt, 1995, p. 173). However, due to the ability to draw on assistance from many areas within New Zealand, repairs to this damaged infrastructure occurred at a rapid pace (Peek, 2011). Impressively, within the space of four weeks, many of these critical lifelines were repaired. Due

to the countless after-shocks however, fragility of these systems still remains a concern for both residential and economic sectors. Perhaps, it will be the numerous continuous after-shocks that dictate and have the final say on the direction of the bouncing back process.

Criteria	Haiti	Christchurch
Structures		
Bureaucracy	High	High
Specialization	Low	High
Professionalization	Low	High
Conservative/Behavioural Paradigm		
<u>Technocratic solutions</u> Plans	Low	High
Engineering/Building codes	Low	High
Technology & Infrastructure	Low	High
<u>Cultural adjustments</u> Education	Low	High
Training	Low	High
<u>Adversarial View</u> Nature vs Society	Low	High
Radical/Structural Paradigm		
<u>Societal</u> Vulnerabilities	High	Low
Poverty	High	Low
Marginalization	High	Low
Migratory Patterns	High	Low
Development	Low	High
<u>Economic & Political processes</u>	Low	High
Resilience		
<u>Proactive</u> Reduction measures	Low	High
Readiness	Low	High
Adaptive capacity	Low	High
Specialized skills	Low	High
Education/financial investment	Low	High
<u>Traditional</u> Social Capital	High	Low/Medium
Trigger Agents		
Natural Environment	High	High
Physical Environment	High	Low
Political Environment	High	Low
Economic Environment	High	Low
Other:		
Governance	Low	High
Leadership	Low	High
Corruption	High	Low

Figure 3: Case Comparison - Haiti and Christchurch

Chapter 6: Discussion

This chapter employs a cross-case analysis wherein themes from both cases were compared and contrasted with the derived themes, reflective of this comparison. The idea underpinning this analysis was to display the similar and the unique of the disaster in Haiti and Christchurch, to highlight which factors can be expected to impact ‘bouncing back’ from a disaster and to provide insight as to the relationship between these factors. As the preceding chapters revealed the specifics each region has to contend with, this chapter takes a ‘step back’ and looks at the overarching (bigger picture) issues impacting upon these regions. The finding of this analysis shows that certain aspects that inform the bouncing back process are not necessarily so clearly defined. Thus, from an EM perspective when looking at the factors that affect regions with bouncing back from a disaster, one should consider the two broad themes "governance" and "culture of preparedness" with the ‘lesser’ themes "leadership" and "resilience", inter-woven and subsumed within.

Generation of vulnerabilities

A key difference between the Haiti and Christchurch disasters, indicate the ‘timeframe’ in which vulnerabilities were generated, as an important element in bouncing back. Within Christchurch, many of the vulnerabilities were generated post-quake. This tends to indicate the ‘relative success’ of implementing policy and procedures aimed at reducing known vulnerabilities. Furthermore, it tends to reflect the likely outcome of MDC resource application. It is also indicative of the NZ adoption of a ‘resilience approach’ toward disasters as well as reflective of the capacity to contend with these challenges. However, it is also an indicator of the challenges to be contended with. Within Haiti, the long-standing historical and political processes are the crucial ‘determinants’ which led to the creation of vulnerabilities affecting the population. Therefore, economic, social and physical vulnerabilities were generated as a consequence of long-standing processes. Let us go into the details of the timeframe of these vulnerabilities for Haiti and Christchurch.

In pre-quake Haiti, these ‘everyday’ historical and political vulnerabilities were exacerbated by environmental degradation which led to the social construction of a disaster. Extensive deforestation within Haiti thus produced two significant outcomes i.e. i) massive urban migration

due to the lack of arable land and ii) loss of natural protection afforded by trees against meteorological and hydrological events. Facilitating this exodus, the economic centralization within the Port-au-Prince region, served as an enticement to the rural poor. Thus, when the earthquake struck on an already vulnerable, poverty-stricken society, the results were catastrophic. The environmental impacts are ‘neatly’ captured within the vulnerability paradigm which posits that mass migration of poor inhabitants, invariably leads to poorly constructed houses in unsuitable locations, often living in squalor conditions (McEntire, 2004). These findings are consistent with an earlier study in which McEntire and Fuller (2002) have cited inappropriate locations of housing settlements; uncontrolled urbanization and improper housing construction as “determinants” which significantly contribute toward a disaster (p. 130).

In post-quake Haiti however, limited ‘new’ vulnerabilities were generated. These included mass displacement, loss of livelihoods and health impacts. This period in fact, served if anything, to reinforce and highlight the pre-existing vulnerabilities. One of the ‘emerging’ vulnerabilities relates to the issue of land tenure, ultimately culminating in limited access and availability of land in order to construct shelter for the countless displaced locals. Thus, with the existing ‘informal arrangements’ as well as limited state records, land tenure occupies a crucial position in attempting to ‘bounce back.

Conversely, within Christchurch, pre-quake vulnerabilities stemmed largely from the built and natural environment. These environments are inter-twined, in that many businesses and residential properties, particularly within the eastern suburbs, were constructed on known liquefaction-prone land. In spite of this official ‘awareness’, development proceeded on this ‘hazard prone’ soil. It is unknown whether residents were informed of the potential for liquefaction, prior to construction. The potential consequences for future building construction are that residents or businesses may decide against occupying premises on this ‘type’ of land. Indeed, Reale and Handmer (2010) have demonstrated the different levels at which the ‘lost land’ impacts upon society:

- I. From an economic perspective, ‘lost land’ directly translates to a lost livelihood in that businesses may have to relocate and thus lose important clientele within the process. Secondly, the knock on effect may have direct implications for the employee/employer

relationship. Compounding this relationship within Christchurch would be the psychosocial impacts associated with the quake itself as well as the numerous aftershocks (Gluckman, 2011). Furthermore, the inability to utilize land as collateral in securing a loan in order to re-establish a livelihood, post-disaster may loom as an issue. This could also extend to negative implications for household insurance.

- II. Socially, displacement of people may occur from land that is not able to be ‘rehabilitated’ or simply that residents do not wish to inhabit. Therefore, these residents may seek alternative accommodation or property but could be limited due to limited insurance payouts.

Thus, the vulnerabilities associated with land issues, impacts upon a ‘broad strata’ of society. Similar to Haiti, the availability of land potentially serves as an important issue in the bouncing back process. In post-quake Christchurch, other ‘issues’ centre mainly around psychosocial effects, compounded by the numerous aftershocks (Gluckman, 2011). Further conditions within Christchurch which impact on their bouncing back and consistent with international disaster impacts, relate to economic challenges (Guha – Sapir, Vos, Below & Ponserre, 2010).

Economic impacts

The United Nations Department of Humanitarian Affairs (UNDHA) contends that disasters should be viewed in economic terms as opposed to solely focusing on humanitarian cost (Henderson, 2004). From a macro-economic perspective, what is striking about Haiti is the economic centralization. The fact that most of the country’s GDP (70%) is generated by industry located in-and-around the Port-au-Prince region, is reflective of a ‘classic scenario’ which underpins the vulnerability paradigm. This economic ‘demographic’ therefore provided the momentum for a mass migration of inhabitants from the countryside into the city. Many urban unemployed Haitians survived albeit barely, on a meager existence, eked out through selling small-scale products including charcoal, the major fuel source. Thus, the inter-relation between ‘daily economics’ and environmental degradation is self-evident in that, the production of charcoal is the chief cause of extensive deforestation (Dolisca, McDaniel, Teeter & Jolly, 2007). Post-quake, the subsistence provided by the limited employment opportunities as well as the limited scale ‘entrepreneurial activities’ were all but extinguished. Thus, the overt economic

difficulties pre-quake were significantly worsened by the disaster agent. Adding to the uncertain economic environment, the ‘tenuous’ relationship between the Haitian government and international donors has the potential to negatively influence reconstruction efforts, a source of employment opportunities (Birkmann, 2011).

In the pre-quake period, Christchurch from a financial perspective is a ‘cog’ within the economic decentralized framework in New Zealand. However, as it is the ‘economic driver’ within the South Island, reverberations are thus expected to be felt throughout the country. The disaster and consequently repeated aftershocks provided the stimulus for a mass exodus of skilled and other professionals from Christchurch. It is uncertain whether this movement is temporary and what percentage will return. This post-quake economic demographic together with the ‘demand’ for growth and [re]development, needs to be counter-balanced by the availability of resources (workers from other regions may have to be sourced). These findings are consistent with the view that it is ordinarily economic imperatives that occupy a central role in stimulating a society’s ‘bouncing back’ (Stevenson, Kachali, Whitman, Seville, Vargo & Wilson, 2011).

Inasmuch as the SEBN model (MCDEM, 2002) posits the ‘separateness’ of the Built and Economic environment, the Christchurch earthquake displayed that this is somewhat an ‘artificial’ divide in that, with widespread building damage, many businesses will have to find (or build) new premises. Thus, their profitability is impacted by the potential lack of skilled workers as well as infrastructure and therefore, the challenges are far greater than a ‘business disruption’. Post-quake though, the presented environment encourages organizations to develop ‘creative solutions’ in order to cater to the altered landscape. The ‘uniqueness’ of the Christchurch quake however, occurs on two levels in that many businesses, in light of the damage sustained in the CBD, lack access to their premises. Linked to this and perhaps indicative of a lack of continuity measures, a shortage of ‘suitable’ premises creates further difficulties. Secondly, whilst economic resilience emphasizes ‘ingenuity and resourcefulness’ (Rose, 2004) in finding solutions, the emotional well-being of staff is somewhat affected by levels of uncertainty generated by the numerous aftershocks. With economic impacts extending into the tourism sector, a major source of revenue generation for this region is being affected. Thus, the time element attached to the bouncing back process, directly equates to financial

imperatives. Overall, from a Christchurch perspective, the bulk of the economic challenges were primarily generated by the earthquake.

Governance

International organizations such as the World Bank and other NGO's have listed governance as the most important domain that needs to be addressed in reducing people's vulnerability to disasters (Cannon, 2008). The centrality of governance is also viewed as a means of reversing many of the dynamic pressures displayed within the Pressure and Release (PAR) model posited by Wisner, Blaikie, Cannon and Davis (2004). They view good governance as a term that covers "ideologies, power relations, formal and informal networks and resources that determine the relationship between the state and civil society" with dimensions encompassing the cultural, political, social and economic sphere (p. 345). The IFRC (2004; chapter 1) has defined good governance as "the arena in which everyone ... negotiates their share of space, resources and entitlement to fulfill their needs and develop their interests. It is about who gets to make or influence decisions, how these decisions are made, and for the benefit of whom". Thus, governance does not only entail a 'top-down' legislative function, instead extending to and including participation of stakeholders within the private sector and civil society (Wisner, Blaikie, Cannon & Davis, 2004). Clearly then, this manifestation of governance is markedly absent within Haiti. Drawing on the historical narrative which highlights the regression of state 'paralysis' fuelled by endemic corruption, Haitian citizens are marginalized on many fronts. As befits people who inhabit a 'fragile state', Haitian citizens are excluded from power-structures, be they formal or informal. It is on this basis that an informal 'alternative governance' structure, particularly 'visible' within the activity of land transactions, operates.

With particular applicability to the field of disaster management, the state lacks the capacity to establish vulnerability reduction mechanisms and practices. State inefficiency subsequently translates to a lack of standards, the bypassing of building regulations, lack of awareness campaigns and a general state of poor public health, educational structures and facilities. As a consequence of ineffective governance therefore, NGO's have stepped in to fill this breach, a task which ordinarily is the prime responsibility of the state. Birkamnn (2011) alludes to the short-comings of this approach in that it fosters a 'removal of responsibility' from the state and concomitantly, weakens it over the longer term. Instead, he adds that the state needs to be

strengthened and supported so that collective action may be undertaken. However, due to endemic corruption and reflecting the current 'mistrust' between international donors and the state, this undertaking is a challenging task (Birkmann, 2011).

Kahn (2005) has demonstrated that democratic countries fare demonstrably better when disaster strikes. This is not to suggest that democracy is an absolute for reducing disaster impacts with Cuba serving as an example of a non-democratic state that has an 'exemplary' record for reducing disaster losses (Wisner, Blaikie, Cannon & Davis, 2004). Rather, the interaction of government, private sector and civil society and the 'complex interaction' between these entities that shape government policy, should be underpinned by transparency and accountability (Ahrens & Rudolph, 2006). Christchurch, by way of contrast, displayed the many characteristics of a proactive approach toward coping with the impacts of a disaster. Many of the adopted approaches though, stem from being part of an institutionally strong, stable democratic environment as well as the reality of living in a hazardous landscape (ODESC, 2007). With viewing disaster 'management' as a priority, appropriate legislation was enacted which culminated in codes and practices consistent with a holistic approach toward reducing disaster vulnerability and increasing resilience (MCDEM, 2002). Political stability and effective governance thereby provides the basis for creating the environment in which resilient societies can be established (IFRC, 2004). However, a challenge for democratic governance is the duty to consult its citizens and involve them in decisions and plans that may impact upon them (Berke and Campanella, 2006).

Subsumed within the domain of governance, leadership, a central feature of effective governance, was pivotal in leading the response effort within Christchurch. As 'contained' within the natural hazards paradigm, the hierarchal 'command and control' style of leadership appears to have been 'effective'. However, post-response presents a different set of challenges indicating the necessity of a 'visionary' style of leadership (Rubin & Barbee, 1985). Within Haiti, the 'near total' lack of leadership is highly reflective of institutional weakness and the larger processes of political instability found within the 'Haitian narrative'. Contributing to a 'leadership challenge', a significant number of 'potential' leaders within the health and civil service were killed in the quake. As a consequence, the self-evident lack of credible leadership, occupies a crucial position in leading this region to bounce back (Verner & Egset, 2006). It is

thus effective leadership which is crucial to dictating the pace and direction of the bouncing back process.

On the negative side, bureaucracy is an element of governance which poses a potential impediment in facilitating a 'smoother' bouncing back process. Therefore, the ordinarily lengthy process associated with 'red tape' has to be 'balanced' with the desire for flexibility, a key ingredient of the bouncing back process. As revealed within the Indian Ocean tsunami (2004), government delays have been shown to have a negative impact upon this process (Athukorala & Resosudarmo, 2005). With the appointment of a Minister for Earthquake Recovery to supervise enabling legislation and procedures, serves as an acknowledgement of the potential for bureaucratic delays. Furthermore, CERA as a co-coordinating agency is also seen as a means of expediting this process again, contingent upon resource availability (Rotimi, Wilkinson & Myburgh, 2011).

Culture of Preparedness

Central to the emergency management field and reflective of an awareness of the ramifications of a disaster impact, the establishing of a 'culture of preparedness' is the defining attribute, which anticipates and prepares a society for coping with the impacts of a disaster (MCDEM, 2005). It is this culture of preparedness, evident within Christchurch yet so strikingly absent within Haiti, which differentiates between the two disasters. Within Haiti, the discernible lack of emergency management planning, structures and resources should be viewed through the lens of a 'fragile state' underpinned by extreme levels of poverty and weak governance (Collier, 2009). Conversely, within Christchurch, the emergency management structures and processes are geared toward the attaining of resilience, the capacity for a community/society to absorb, cope and bounce back from a disaster.

The New Zealand policy toward communities coping and bouncing back from a disaster employs two approaches. Firstly, acknowledging that reducing vulnerabilities is one way of facilitating resilience, 'indirect' measures pertain to an investment in development and construction practices. These measures are informed by the Building Act (2004), Resource Management Act (RMA, 1991), and the Civil Defence and Emergency Management Act (CDEM, 2002). Therefore, stringent building codes and related measures alluded to earlier are as a consequence

of the understanding that should an earthquake occur, fewer buildings would collapse or suffer significant damage. Secondly, 'direct' measures are informed by the National Civil Defence Emergency Management (CDEM) Strategy (2007). Thus, the emergency management process is underpinned by the CDEM Act (2002) and supplemented by a 'raft' of supporting documentation which sets the platform for creating a *Resilient New Zealand*, the vision contained within the strategy. Furthermore, by adopting a 4R (Reduction, Readiness, Response, Recovery) approach, proactive measures within each of the above 'phases' were introduced. Hufschmidt (2011, p. 4) refers to this "combination" [direct and indirect] of 'approaches' as intended to supplement each other in the event of a natural disaster. Thus, in relation to the highest Peak Ground Acceleration (PGA) ever recorded within seismic history, the Christchurch response produced a 'limited' building collapse. Furthermore, massive resources were deployed to rescue and assist with injuries with lifeline utilities being re-established within a matter of weeks. It is this response capacity, identified by Norris, Stevens, Pfefferbaum, Wyche and Pfefferbaum, (2008) as an important factor in decreasing post disaster psycho-social effects and consequently assisting a bouncing back.

Within Haiti, the discernable absence of resources as well as an emergency management structure, has led many inhabitants to employ other forms of 'coping mechanisms'. Thus, 'traditional resilience' is not unusual within regions of the world in which inhabitants have to contend with a perpetual state of "permanent emergency" (Cannon, 2008). Central to 'traditional resilience' is the social capital inherent within communities which enable them to survive (Gaillard, 2007). However, a limitation of traditional resilience is evidenced within this earthquake, primarily as a result of the 'extremeness' of the disaster agent impacting upon vulnerable people. Mass displacement resulted with the majority of residents seeking refuge within temporary shelter. Contributing to these 'internally displaced' many lost their minimal resources as well as places of abode. Conditions of 'unfamiliarity' and isolation were thus a consequence of this displacement. Whilst it is acknowledged that development can increase or alternatively reduce vulnerabilities, development is also viewed as a means of assisting 'traditional' coping mechanisms (McEntire, 2004; Collins, 2009). Therefore, implementing development practices could be viewed as a means of assisting these communities with bouncing back.

Inter-relatedness of Psycho-social Impacts

An aspect of the 'uniqueness' of the Christchurch earthquake in contrast to Haiti, is the persistent aftershocks still occurring months after the 'event'. Thus, when contemplating the future, many uncertainties (unknowns) have been generated. As a consequence of the many deaths as well as the physical and economic impacts, it is thus psycho-social vulnerabilities that appear to be at the centre of the bouncing back process. However, these vulnerabilities are intimately tied to the economic recovery as well as the bureaucratic process which has significant potential to contribute to the generated uncertainties. An additional complication particularly from a scientific perspective and a limitation of the technocratic approach is the 'lack of trust' of scientific information (Gluckman, 2011). Given the fact that many residents assumed that the September quake was the 'big one', only to have that illusion, tragically shattered, only adds to the 'unknowns' surrounding the future. Furthermore, the damage or destruction of the cultural and heritage buildings may serve to alienate many affected residents. Indeed, it is the loss of 'the known', the 'familiar', invariably tied to an individual and community's sense of identity, which may significantly influence an individual, community or society's bouncing back (Walker, Scott & Fry, 2011). Thus, poor communication from the relevant authorities, loss of employment or other financial woes and the aftershocks, collectively appear to be the major contributors to psycho-social 'issues'. Whilst Johnston et al. (2011), state that the overall impact of the earthquake within Christchurch is negative, notwithstanding the phenomenal number of deaths that occurred, the earthquake in Haiti provides a beacon of hope for this beleaguered nation. An opportunity thus presents itself as a "catalyst for change" (Paton & Johnston, 2006, p.9), a 'clean slate' on which to 'build back better.'

Chapter 7: Conclusion

The fundamental question prompting this study, asked how is it possible that a ‘similar’ disaster agent could produce such contrasting outcomes? Consistent with the purpose and aims of this study, further enquiry attempted to delve into what factors affect these disaster-affected regions with bouncing back. These questions cannot be answered in ‘isolation’ without exploring the ‘uniqueness’ of the ‘bounded systems’ of Haiti and Christchurch. As this study has shown, an ‘awareness’ of the broader, historical, political and socio-economic framework within which societies exist, should be considered. It is within these ‘contexts’ that the root causes of disaster have been implicated by creating the conditions out of which, disasters emanate. That is, this study has highlighted how pre-disaster conditions have a direct bearing on post-disaster outcomes. It was also found that the ‘concepts’ of vulnerability and resilience occupy a central position in exploring; i) disaster impacts and ii) factors contributing to a bouncing back.

The two ‘cases’ within this study closely align with the underlying disaster paradigms (vulnerability and natural hazard) which inform the disaster discourse. Christchurch is part of a democratically stable, institutionally strong and resource rich country (MDC). In recognition of the risks faced by diverse natural hazards, New Zealand embarked on a course of vulnerability reduction as well as ‘investing’ in resilience. Achieving these ‘objectives’ involved the application of direct and indirect measures which cumulatively, would result in less buildings collapsing, fewer deaths with an overall limited damage to infrastructure and property in relation to the disaster agent. This ‘resilience pathway’ thus referred to the capacity of communities/societies to absorb, cope and recover rapidly from the impacts of a disaster. The remarkable aspects of the Christchurch earthquake of September 4th is that these ‘ideals’ of a ‘rapid recovery’ seem to have been somewhat realized. That is, the ‘absorbing’ and ‘coping’ aspect of the disaster have been to some extent, attained. However the quake of February 22nd produced ‘known unknowns’ and thus within the bouncing back process, many challenges have been realized. Key to this (bouncing back) process however, appears to be an ‘economic drive’ which may be counter-balanced by the psycho-social impacts as well as the potential bureaucratic requirements. Thus, with the creation of the Canterbury Earthquake Recovery Authority (CERA), the government has signaled a desire to ‘fast track’ this process.

Indicative of the multifaceted problems within Haiti, the vulnerability paradigm points to the 'disaster state' within which societies 'find' themselves. Thus, the overwhelming levels of pre-quake vulnerability within a LDC such as Haiti, predicted a catastrophic outcome. Strengthening these 'known' vulnerabilities, the political and historical dimensions directly translated into poor governance and 'weak' leadership, invariably facilitated by endemic corruption. It is thus within a state of political instability that crucial issues such as land tenure are allowed to 'fester'. From a disaster management perspective, the underlying conditions unsurprisingly culminated in the absence of a 'culture of preparedness'. However, this absence of a culture of preparedness should be viewed through the lens of a society whose focus is geared toward daily survival rather than a big 'disaster preparedness process', sometime in the future. Aside from the damage directly attributable to the disaster agent, the factors that affect Haiti with 'bouncing back' are eminently visible pre-disaster. Reversing some of these (long-term) issues such as deforestation and poverty will require a massive investment in political stability and sustainable development. On a positive note however, the 'traditional resilience' coping mechanism displayed by the locals would support these development initiatives. Christchurch serves as an example of the benefits of 'development' in that, of the (pre 1976) URM buildings that collapsed, many were found to have mortar of 'low quality'. Therefore, on the basis of having the resource and economic/financial strength, introducing international building standards and related engineering measures, curbed the disaster outcome. In contrast, Haiti, essentially due to the inherent conditions and as so vividly underscored by the vulnerability paradigm, shows how a plethora of factors contribute to 'creating a disaster state'.

Aspects of this study are consistent with international disaster trends which reveal that LDC suffer a greater mortality rate as opposed to MDC who carry a greater economic burden, post-quake. These statistics tend to indicate that the different levels of development which occur within LDC and MDC respectively, has a direct bearing on the overall outcome. Christchurch has demonstrated that investing in infrastructure, building codes and standards, educating the public as well as implementing emergency management institutions, can reduce the mortality rate as well as property damage in relation to the forces generated by a natural hazard. However, due to the many 'unknowns', challenges will always be realized for a community or society in bouncing back. It is how the societies deal with these challenges that matter.

Study limitations

Due to the dynamic nature of disaster research, factors beyond the ‘control’ of the researcher impacted upon the methods employed to gather data as well as the restrictions imposed by the relevant authorities (those who have ‘control’ over particularly response-related activities). Thus, this study had to contend with the limitations imposed by limited data availability related to Christchurch research embargo. As a consequence, this study shows limited insight into the social aspects of a ‘recovering’ Christchurch including household preparedness measures.

The SEBN model shows that elements of the Social, Economic, Built and Natural environments are inter-twined especially as they impact on communities which are at the ‘heart’ of this model. However, a limitation of this model is that this study highlighted a few over-arching areas (themes) that are not accommodated. Domains such as governance and leadership, identified within the case studies, emerge as critical themes which influence and inform a community with bouncing back.

Furthermore, this study ‘experienced’ limited economic data in relation to insurance and Earthquake Commission payouts (EQC). As many of the impacted areas were being inspected as to house and land viability, limited data had been produced. Thus, issues surrounding insurance and Earthquake Commission (EQC) payouts in relation to the quake could not be assessed. As this study adopted a ‘wide-angled’ lens, certain aspects may not have been examined to a sufficient depth. However, as stated, an intention of this study is that it could be utilized as a ‘springboard’ for further in-depth investigation.

A limitation within the ‘bouncing back’ process and in relation to time is that there is no ‘fixed point’. That is, who decides when an individual, community, organization or society has bounced back?

Study recommendations

As this study demonstrated, mainly economic, psycho-social and physical factors affect a ‘bouncing back’ in Christchurch, tentative recommendations for future research include in-depth investigations into i) psycho-social impacts with particular emphasis on its overall ‘centrality’ to the ‘bouncing back’ process, ii) In light of the ongoing aftershocks, how could communities be better prepared for the sustained psycho-social impacts of an ‘on-going’ disaster? iii) The

possibility of land-use planning for post-quake displaced, iv) Economic impacts of a disaster on an individual and business level.

This study also suggests that the link between vulnerability and resilience is of great significance. Thus, from an academic perspective, cognizance of vulnerability and its connection to resilience should be considered when discussing the 'concept of resilience' or how communities bounce back. Also, if Haiti and Christchurch serve as examples of LDC and MDC respectively, clarity should be made surrounding 'resilience issues' between societies located within these parts of the world.

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