



# Places, people and perpetuity: Community capacities in ecologies of catastrophe

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## Abstract

Vulnerability is a multifaceted phenomenon brought about over time. Simplified interpretations based upon selective representation of current conditions serve to deny overdue attention to its root causes. As disasters themselves ignore boundaries of place and time, so also must their exploration, as exemplified by the long history of vulnerability reduction research and practice. Descriptions of the causes of vulnerability, therefore, necessarily transgress conventional disciplinary and sectoral boundaries; not to do so would disregard the very nature of the subject. Accordingly, this paper seeks to go beyond some assumed practice—such as viewing vulnerability as a contemporary snapshot of a group of people in a specific place—in an attempt to demonstrate evidence of vulnerability and to begin to reveal its causes, so that national and local, multidisciplinary and multi-sectoral



applications from the past and the present might assist its long overdue reduction, now and in the future.

**Keywords:** disaster ecology, place-based geography, resilience, risk ecology, vulnerability

## **Introduction**

“Vulnerability” and “resilience” frequently appear in the literature dealing with disasters and other forms of change. Their occasional pairing, as simplified interpretations of vulnerability on the one hand and resilience on the other, implies resilience as an appropriate counter to vulnerability without justification or in-depth discussion (e.g. Handmer, 2003). Such juxtaposition requires examination, as noted by Manyena (2006), especially in the context of the studies that do not see vulnerability and resilience as opposites (e.g. Timmerman, 1981).

Given the varied definitions of the terms and the intense debates surrounding their meanings and applicability, continued exploration of their inter-relationships is useful. This paper is directed towards ideas and applications of place-based vulnerability that are often side-stepped by a focus on people vulnerable at a current time, without considering broader geographical or historical characteristics that have contributed to vulnerability and its reduction. This approach is not to deny the importance of the people focus, but to ensure improved comprehensiveness by highlighting aspects of place in vulnerability, especially by examining an ecological sharing of environments and places through an understanding of “risk ecologies”.

## **Vulnerability**

To be vulnerable to natural hazards is to be susceptible to their impacts and effects (Lewis, 1999, 4), a condition that may be a product of often long-term processes within societies, and one which may apply to places as well as to people (Lewis, 1999, 5, 16). Many definitions of the term exist, revealing speciality, diversity, and stages of interpretation and of concept development (e.g. Manyena, 2006; Hogan and Marandola, Jr., 2005; Weichselgartner, 2001).

The term “vulnerability” may, in some circumstances, be suggested as being too technocratic, negative, or otherwise inappropriate (e.g. WiCoP, 2004), and to be categorised as “vulnerable” can be stigmatising when applied to people or social groups (Fordham, 2007, 2). Necessarily, some words appropriately convey powerful, unpleasant and negative descriptions of similarly powerful and unpleasant processes and contexts. The term may be taken as derogatory when applied to people, especially if the term is misunderstood (see also Levine, 2004), but less so when applied to places, and appropriately so when describing processes and their consequences, which do cause problems that should be resolved. It could

be that understanding of “vulnerability” is being restricted by constraints of distaste, but unpleasantness, where it exists, should not become a barrier to understanding and resolving insidious and invidious activities and processes.

A comparative and positive example is the study of genocide, the origins of which are described by Schaller (2008) in his illuminating description of Raphael Lemkin’s work between 1944 and Lemkin’s death in 1959. Born in Poland in 1900, Lemkin considered “all aspects of group life” (Schaller, 2008, 85) to be affected by genocide and that, therefore, “techniques of group destruction” (Schaller, 2008, 85) included the political, social, cultural, economic, biological, physical, religious and moral, a concept that was beyond that of the 1948 *United Nations Convention on the Prevention and Punishment of the Crime of Genocide*. Therefore, the study of genocide is similar to that of vulnerability, not only in regard to its comparable constraints of distaste and unpleasantness but also in its humanitarian concern, multidisciplinary purview, and post-World War Two subject history, and considering this place-based discussion, there are useful parallels with Hewitt’s (1983b) discussion of “place annihilation” during war.

A particular definition of vulnerability is “the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of natural hazard” (Wisner et al., 2004, 11). In this people-oriented assertion, “situation” undoubtedly applies to personal well-being but could potentially apply to location as well. A few pages later (Wisner et al., 2004, 15), for purposes of clarifying the authors’ emphasis on people, some aspects of place are explicitly excluded: “‘Vulnerability’ [...] refers to people, not to buildings (susceptible, unsafe), economies (fragile), nor unstable slopes (hazardous) or regions of the earth’s surface (hazard-prone)”.

However, place and discussion of different meanings of place are explicitly included and are emphasised elsewhere in Wisner et al. (2004) and in the same authors’ other writings (e.g. Cannon, 2007; Susman et al., 1983 [for which Wisner is a co-author]; Wisner, 2004). Place is especially emphasised in the context of the authors’ discussion of people living in hazardous places or in places made to be hazardous, not through choice but through external social, political and economic forces. In vulnerability studies and in vulnerability reduction practice, however, relegating location to “second place” is unrealistic, as further supported by other authors demonstrating the importance of place for vulnerability (e.g. Hewitt, 1997; Hewitt and Burton, 1971; Oliver-Smith, 1977, 1979a; Weichselgartner, 2001; Weichselgartner and Obersteiner, 2002).

As these publications demonstrate, occupants of places, communities or buildings, knowingly or unknowingly, inherit and become subject to the vulnerability of place. Places have longer existence than people. People come and go, immigrate and emigrate, live and die, in places that have longer histories than those of people’s occupancies or people’s lives. What is done, or not done, to a

place by people in distant or recent pasts, can come to affect not only its occupiers at that time, but also those that follow, recurrently for many years and in perpetuity. Examples are vulnerability in Yungay, Peru (detailed below), exposed by an earthquake-induced rock avalanche on 31 May 1970 (Oliver-Smith, 1977, 1979a,b, 1986); vulnerability in Antigua exposed by multiple hazards (Lewis, 1984); and vulnerability in Luzon, the Philippines, exposed by cyclones (Gaillard et al., 2007).

What is done, or caused to be done or not done, may accrue and recurrently become manifest as vulnerability for people, irrespective of whether those people grew up in, or later moved into, that place—not only single specific places, but also numerous and varied settlements in wider environments, and not only people as occupiers of any specific place, but also those adjacent, nearby and even distant to it. Distant to it, because people who migrate due to vulnerability, or due to vulnerability's manifestation in a disaster, must go somewhere, and the displaced persons literature shows how near or distant host communities are affected by the vulnerability of the place from which displaced persons came (e.g. Ashmore et al., 2003).

Environments are expansions of place. What is done to places affects environments; what is done to environments affects places. The likelihood of hazards, such as landslides, flooding and fires, can be increased; the consequences of these hazards and of others such as earthquakes and storms can be exacerbated; and what were once usual and desirable events with environmental and social benefits can become hazards as “extreme” events leading to environmental and social damage.

Flooding is explained extensively in the literature. Structural defences in some places have made seasonal and slowly occurring flood events into dangerous deluges, affecting life as well as property, which would not have been built in the floodplain without the false sense of security imposed by the presence of structural defences (e.g. Criss and Everett, 2001; Etkin, 1999; Mileti et al., 1999; Tobin, 1995). The typical and usual flood event becomes a flood hazard due to the underlying vulnerability, leading to a flood disaster. Hewitt (1997) terms such events “unnatural hazards” and Kelman and Mather (2008) apply this argumentation to volcano-related flows. Whatever choices are made to create and deal with “unnatural hazards” reflects humanity's relationship with the environment, a risk ecology that may be counter-reflected by ensuing environmental hazards or rendered durable by lack of such hazards.

Some people's present-day vulnerabilities, or lack thereof, may thus have derived from activities of other people long before them who owned or occupied the same or another place or who influenced what was done with that place. Such influence continues in contemporary times. The current vulnerabilities of many people in certain places may be created, perpetuated, or exacerbated by their contemporaries who live in other, usually safer and more affluent, places.

Oliver-Smith (1979b) describes the “four-hundred year earthquake” (later termed the “five-hundred year earthquake”) in referring to the Yungay disaster, of which the root causes of vulnerability were exposed during the event but took 400-500 years to build up. Oliver-Smith’s work (e.g. Oliver-Smith, 1977, 1979a,b, 1986) certainly describes much more than that point, evidencing, amongst other aspects of vulnerability, poignant critiques of the post-disaster response. Yet the place-based characteristics of vulnerability over the centuries before the disaster, which Oliver-Smith highlights, represent a defining facet of examining vulnerability in the context of ecologies of places, people and perpetuity.

Similarly, some aspects of colonial history have been identified in Martinique as contributors to present-day vulnerability (Jeffery, 1981; Lewis, 2009), and a study of colonial archives has assessed the effects on vulnerability by “natural disasters” since the seventeenth century (Lewis, 1982). Studies in Tonga (Lewis, 1981) and Antigua (Lewis, 1984) observe how distant historic events may impact present-day vulnerabilities. Those of Antigua indicate how buildings, both as places and as contained by places, inherit and bequeath vulnerability, or security, to their successive occupants. Naturally, these historical analyses are not the only factor influencing contemporary vulnerability. The histories of places, though, are too frequently ignored in attempting to understand vulnerability as an often calculative or calculated snapshot in space and time (e.g. Cutter et al., 2000; IPCC, 2007).

Attention to historical relevance is particularly important given recent definitional discussions and alterations. UNISDR (2008) defined “vulnerability” to be the “conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards”. IPCC (2007, 883) defines vulnerability to be “the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.” IPCC’s (2007) definition focuses almost exclusively on climate change and requires definitions of other phrases such as “adaptive capacity”. UNISDR’s (2008) definition is more generic and easier to understand and to apply in practice.

The most important difference between the two definitions is the IPCC (2007) implying that a specific measure (“the degree to which”) of vulnerability can be taken, rather than UNISDR’s (2008) inclusion of “factors and processes”. That latter phrase accepts that “vulnerability” is more than a snapshot in space and time. While noting that climate change is considered to be a “hazard” within UNISDR’s (2008) definition, this focus on longer-term factors and processes connects better with the detailed and comprehensive scientific literature on vulnerability (Hewitt, 1983a, 1997; Lewis, 1999; Mileti et al., 1999; Oliver-Smith,

1986; Wisner et al., 2004). Yet UNISDR (2009) has subsequently changed their definition to the “characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.” This definition drops the concept of processes whilst implying that the past has less relevance than the present. In this way, UNISDR’s inclusion of place and process has been severely weakened.

UNISDR’s (2009) and IPCC’s (2007) definitions provide needed insight into vulnerability, but much more is required that UNISDR and IPCC do not take into account but which has already been demonstrated and implemented in the literature. In particular, the narrowing (and narrow-mindedness) of certain vulnerability paradigms leads to assessments of vulnerability by often focusing on the condition of “vulnerable groups”; that is, of people rendered more vulnerable than a prevailing norm in the places they have occupied. Again, that type of assessment is needed, but along with much more.

For example, epidemiological studies of disaster deaths frequently focus on demographic variables, such as for heat-related deaths (e.g. Kovats et al., 2004; Semenza et al., 1996). These studies are needed and are important, since all people are vulnerable to hazards to some degree, but some are more vulnerable than others, often due to biologically and socially derived individual characteristics. Yet investigations into the reasons and causes of why this is the case are not always addressed in these assessments of current vulnerabilities, for which purpose, and especially in a place, would require the dimension of time.

Whether people influenced by certain characteristics such as poverty, oppression, and lack of choice often lead their lives in hazard-prone places or in places that are made to be hazard-prone, is discussed by Hewitt (1983a) and Wisner et al. (2004). The dimension of time is important because characteristics change, so vulnerability is dynamic. Where it is fully recognised and accepted that present-day vulnerabilities may have accrued from past actions, it also becomes more apparent that policies and activities now could affect future vulnerabilities. Without that element, a danger exists of doing nothing more than describing (who, what) without fully understanding and explaining (why, how).

Current vulnerabilities have a past in which they may have accrued, or have been caused or exacerbated, by the actions of others (e.g. Lewis, 1999; Oliver-Smith, 1986). As with the four-hundred year earthquake, known or unknown characteristics of vulnerability may prevail for long periods of time before being made manifest by environmental events such as cyclones, volcanic eruptions or flooding. Analysts of vulnerability, therefore, have the task of identifying its conditions, causes, and reasons over time and *before* their partial exposure in subsequent “disasters”. Not requiring a disaster for their undertaking, such studies so far indisputably indicate that some, perhaps the majority, of vulnerabilities result or evolve from the actions of others, taken usually in their self-interest, either in

present time or in the past (Jeffery, 1981, 1982; Hewitt, 1983a, 2007; Lewis, 1999, 2007; Wisner, 1993, 2004; Wisner et al., 2004).

### **The vulnerability process in a place**

As Kelman and Lewis (2005) and Lewis (1999) detail, vulnerability is too often seen as just the current state, referring only to what society is, at the moment, regarding characteristics such as its fragilities, weaknesses, exposures, and susceptibilities. Some authors separate some of these terms and view “exposure” and “vulnerability” as being different (e.g. Crichton, 1999). Yet other authors, including Kelman and Lewis (2005), define and evidence vulnerability as being not only the current state but also the process by which that current state was reached and the direction in which the current state is heading (e.g. Hewitt, 1983a, 2007; Oliver-Smith, 1986). The “vulnerability process” refers to the values, ideas, behaviours, and actions that have led to characteristics such as fragility, weakness, exposure, and susceptibility and that can perpetuate or absolve these issues. To deal with them, aspects including resistance, resilience (sometimes “resiliency”), capacity, capability, strength, power, empowerment, and sustainability are necessarily addressed (see also, amongst others, Bankoff, 2004; Crush, 1995; Manyena, 2006; Paton and Johnston, 2001, 2006).

Processes of vulnerability are perpetrated in the actions and activities of others (Hewitt, 1983a, 2007; Lewis, 1999; Wisner et al., 2004) who are remote and beyond the influence or control of places and people in those places rendered vulnerable in consequence. Some domestic vulnerabilities, brought about for example by a lack of awareness or by inappropriate decision making, can be caused by limitations of livelihood options, by restricted land use, by exploitation of people and resources, or by resulting poverty, lack of control and powerlessness. Other vulnerabilities are caused by political and economic pressures; partitioning communities for land acquisition; removal of occupants from traditional resources; and resulting occupation of marginal land more exposed to environmental changes that subsequently become hazards. Consequently, no longer able to grow food crops or to maintain livestock in sufficient quantity, or effectively access employment, resources or services, communities are made to become marginalised, disadvantaged, exploited, and increasingly vulnerable (e.g. Jeffery, 1981, 1982).

Marginalisation, as an end product of control, appropriation and disadvantage, is a process not unique to rural areas. It exists in urban and peri-urban areas of formal and informal settlements (e.g. Kreimer et al., 2003) where, due to similarly invidious processes, high land and property values become an excuse for evictions of the many in favour of profit for the few and a cause of vulnerability for destabilised occupants. Similarly again, immigrants, asylum seekers and forced migrants often come to occupy locations already recognised as vulnerable.

Instead of appropriately being understood as the result of external political or commercial processes and influences, vulnerability continues sometimes to be considered a product of bad luck, an internal lack of awareness, apathy or inadvertent everyday practice. The focus is often on the type of event or “exclusively on the hazard trigger” (Fordham, 2007, 1) and can emphasise a recent or current element of a *status quo*. Some forms of present-day vulnerabilities may have accrued from events in historic and recent pasts, as discussed above, or vulnerability could be unobservable, remaining dormant in the products of corrupt or careless building construction until the occurrence of a moderate earthquake (Lewis, 2008a). Such vulnerabilities are only rarely a part of present perceptions of in-the-field realities; or, if perceived, are dismissed as being inconsequential or are not acted upon. Such inactions thereby reinforce the *status quo* and come to be exposed and confirmed only by the disasters that occur—or recur.

In such instances, long-term and political influences on vulnerability are not given much of a hearing. Not yet perceived, or avoided, as the root cause of pervasive destruction when hazards impact, the vulnerability process is consequently excluded from community disaster risk reduction. This exclusion occurs even where the term “vulnerability” is used and when vulnerability, confined in space and time, is calculated or described, as by, for example, Cutter et al. (2000) and aspects of the EU Scenario project (2007). Accrued over periods of time long before dealing with disasters was conceived, slowly evolving and imperceptible changes are likely to be taken for granted as a *fait accompli* or, especially if perceived as being of political origin, set aside as beyond the remit of the work being undertaken.

Heijmans (2001, 2) appropriately questions Cuny’s statement (1983, 7)—“Reducing the vulnerability of the poor is a development question, and such a question must be answered politically”—but does not explain that Cuny was paraphrasing what “some disaster specialists argue”. Although he expressed his agreement with the general point of view, he continued by stating: “But this should not deter us from examining disasters individually” (Cuny, 1983, 7). Heijmans proceeds to do that, continuing to observe that “for many countries and donors, vulnerability reduction is too political” (for their comfort, she implies) (Heijmans, 2001, 4).

Heijmans (2001, 4) also observes how the concept of vulnerability has been introduced by outsiders, and that it is unlikely that the word is used by those who are vulnerable. This is undoubtedly the case (Lewis, 1979a): neither the word nor the concept exists in some cultures and languages, with examples suggested as being Nepali and Inuktitut according to some people who speak these languages. But while vulnerable insiders may not use the term, as Heijmans (2001) herself describes, they may perceive around them causative processes of their vulnerability. The tragedy is that they do not have the resources or the powers to



counter the external interests, whether commercial or political, that are the cause of their vulnerability. Her plea, therefore, cannot be reiterated frequently or forcefully enough: “[... If ] most disaster management agencies and governments ignore the social and political origin of disasters, how can disaster risk reduction ever happen?”

Millions of people are vulnerable, for they have no options about the places they inhabit, and they are obliged to respond to undemocratic policies, controls and activities by others or to external pressures in the interests of others who may be corrupt (e.g. Hewitt, 1983a, 2007; Lewis, 1999; Oliver-Smith, 1986; Wisner et al., 2004). Most vulnerability is being caused by the processes of exploitation, marginalisation, victimisation, or personal and commercial greed and narcissism. These and other causative factors remain “external” to, or poorly considered by, many vulnerability discussions and assessment methods (e.g. Adger, 2006, critiqued by Kelman, 2008; Cutter et al., 2000), as they are to many resilience analyses and assessment methods (e.g. Berkes, 2007; Folke, 2006, critiqued by Kelman, 2008). Yet showing that it can be achieved, many authors do factor in the vulnerability process, such as the analysis of vulnerability to flooding in the Punjab of Pakistan (Mustafa, 1998), in the Philippines (Gaillard et al., 2007), and in indigenous villages in Papua New Guinea (e.g. Mercer et al., 2009a,b).

Such matters affect people’s way of life everywhere, but survival in adversity is influenced by pressures of poverty, landlessness and exploitation that are directly or indirectly exercised and perpetrated by others who may be corrupt, ignorant, or selfish. As a human right (Kalin, 2008), disaster risk reduction necessitates the removal of the causes of vulnerability and the vulnerability process, but this will not be achieved where corruption is active, as it is in almost all countries (Transparency International, 2005). The result is depletion of options and of “security, livelihoods and happiness”. Decisions are skewed to the advantage of those already with money, power, authority or influence; the powerless and the poor, being deprived of democratic rights to their share of economic transaction, are thereby denied equability and livelihood development. The World Bank has described corruption as one of the principal causes of poverty and inequality, and a cause of injustice, disease and death; corruption is an extreme abuse of democratic values (World Bank, 2006) and a significant cause of exposure to risk and of vulnerability (Lewis, 2008a, 243-5).

### **Vulnerabilities of place**

Some places, and their occupants as shaped by those places, prove to be environmentally vulnerable. Two thousand years ago on The Isle of Chiswell near the south coast of England, a small former fishing community provided locally scarce access to the sea for boats; now, in turn, a closer and higher sea repeatedly damages the community (Lewis, 1979b). Some other conditions made worse by

political disregard or socio-economic pressure are the subject of the brief, illustrative examples which follow.

All examples are of circumstances more negatively pervasive than any assessed *status quo* would reveal and beyond the powers and resources of the vulnerable to bring about change. These three disparate examples illustrate the vulnerability process and set the stage for further discussion on resilience. The difference in the hazard focus in each case study is less important than the similarities in the vulnerabilities of place and the lack of options available to the people to alter them, due to long-term processes that have led to the current, observed situation.

### ***Lefkada, Greece***

A significant example, in a study of traditional construction on the earthquake-prone Greek island of Lefkada, describes vulnerabilities of people in a vulnerable place being increased by local erosion of traditional culture. The study observes that, worldwide, whilst properly constructed reinforced concrete had the initial effect of reducing earthquake losses, its popular use in poor economies and without necessary knowledge led to increased building failure. Over the same period, in Lefkada, traditional use of timber declined in favour of concrete, as also did its traditional skills, with the result that new buildings in timber came to be at greater risk of failure (Karababa and Guthrie, 2007). The resilience of timber construction in earthquakes has been recorded at least since 1843 (Lewis, 1999, 76-7), but cheaper construction, in timber, masonry or reinforced concrete, is shown to have become more vulnerable to earthquake damage.

The study demonstrates how, in the face of economic pressure, local capacities generated against a specific hazard over long periods of time and involving several generations are quickly eroded by externally generated economic forces, and by changes in population caused by outward and inward movements. New technologies, assumed to be superior, contribute to declining local skills and collective memory that combine to erode earthquake culture and consequently to increase vulnerability.

Communities are unlikely to be able to maintain resilient cultures against these inexorable pressures, even if they have the capacity for their identification. It has taken long-term, in-depth analysis by outsiders of the present Lefkada population to begin to expose and to record these changes and their impacts upon vulnerability. The authors also observe how the “revolution” of concrete and steel technologies within construction industries, coupled with socio-economic trends of globalisation, perceived economies of scale, and foreign investments, amongst other factors, contributed to past learning being undermined and pose a threat to local seismic construction cultures that will cause mistakes of the past to proliferate, and losses to continue to increase in the future.

## ***New Orleans, USA***

In August-September 2005, during Hurricane Katrina and its aftermath, the worst flooded area of “Central City” was, at 4,687 km<sup>2</sup>, the city’s largest population density and on the site of a former lake at 1.5 metres below sea level (New Orleans Community Data Center, 2005). The majority of inhabitants were low-income and black, an ethnic minority in the USA with a long history of disadvantage, which added to an already rich melting pot of vulnerability. Social, including political and economic, forces had obliged disadvantaged communities to occupy the most vulnerable areas of a vulnerable city. Those same forces created and perpetuated poverty, which enmeshed in this vulnerability and led to characteristics of place that were, to some degree, defined not just by the people and their poverty, but also by the fact that the people and their poverty developed according to the characteristics of the place. These characteristics of place were further defined by people in other, less poor places, who enjoyed the national advantages of New Orleans’ port and culture without concern for the consequences for other people living in the same city.

This kind of information was available before Hurricane Katrina (e.g. Laska, 2004; van Heerden, 2004) and has since been confirmed by similar data (e.g. BondGraham, 2007; Logan, 2007). The vulnerability of lowest income communities occupying areas of lowest ground elevation was compounded by inadequate flood protection, constructional failure of levees, and removal or destruction of protective wetlands. In hurricane-prone contexts of known extreme vulnerability to flooding, with a long history of previous flooding (e.g. Day et al., 2007), the consequences could not—at minimum, should not—have been unanticipated by authorities or inhabitants.

## ***Tuvalu***

A changing regime of storms in many coastal locations along with sea level rise greatly add to the number and kind of vulnerable places and, therefore, to people in those places. This form of change may be termed “creeping environmental change” (Glantz, 1994), rather than the earthquakes and hurricane in the previous examples, but the same vulnerabilities are exposed by the specific storm or by the long-term trend of worse storms and rising seas. Due to the characteristics of their place, many islands, for example, are vulnerable to proportional impacts of these changes to a degree not likely to be experienced in most continental countries (e.g. Lewis, 1999, 2008b, 2009).

Meanwhile, nevertheless, shores, coastlines and islands almost everywhere continue to be some of the most preferred, and sometimes the most expensive, development sites, leading to continued inland-to-coast migration for rich and poor alike (Carl, 2008). This combination of factors is likely to increase the effects of severe storms in places where people have not before experienced them regularly,

such as the island state of Tuvalu in the South Pacific (e.g. Kelman, 2006; Lewis, 1989), illustrating and perpetuating people's vulnerability in these places.

Tuvalu is effectively entirely coastline; there is little inland from which to migrate or to which to seek shelter during storms. Its 26 km<sup>2</sup> of atolls represents its place as much as that land area's separation amongst eight inhabited atolls, which are further separated by oceanic distances of 650 km. The islanders' sense of place also includes the sea, which is their perpetual source of livelihood and of vulnerability. As saltwater inundation of crops and high tide flooding of properties are experienced more regularly, a possibility also exists of a worse storm than Cyclone Bebe of 21 October 1972, the storm surge from which inundated the capital's atoll and created a new lagoon and a coral rubble deposit larger than many of the atoll's islets (Baines and McLean, 1976; Maragos et al., 1973). Action in place against their known vulnerability can sometimes be beyond those who are vulnerable.

## **Resilience**

As equally indisputable as people's vulnerability to hazards is people's capacity for, resilience in preparedness for, dealing with, and recovery after hazard events. As a concept in the context of natural hazards, although it first appeared earlier (e.g. Timmerman, 1981), resilience had not fully emerged and become fully accepted until the 1990s (e.g. Kreimer and Munasinghe, 1991) out of practical recognition of communities' capacity in adversity and as a counter to what had come to be considered the negativity and pessimism of "vulnerability". Occupants of vulnerable places were generalised as capable of exercising inherent capacities for "recovering strength quickly", "springing back", "buoyancy", and "resuming an original form", with the concept of "resilience" being sometimes enfolded as part of the definition of "vulnerability" (e.g. Alwang et al., 2001; Cannon, 2004; Klein and Nicholls, 1999).

Often interpreted as the capacity for reversion to the condition that prevailed prior to disruption or disaster, resilience is concerned with consequences. It is less concerned with causes of vulnerability beyond its capacity and remit, even though vulnerability results from processes perpetrated by humankind and that are therefore, are controllable by humankind. Causative processes of vulnerability are sometimes considered not to be an issue, except where consequences are currently observable as conditions of people or of buildings (e.g. Norton and Chantry, 2007). However quickly original strength might be recovered, the same event could happen again and for the same reasons (see also Glantz and Jamieson, 2000), both for people and for buildings.

Beyond the purview of "resilience", though, are the *reasons* that led people or buildings to be as vulnerable as they are, or to be in vulnerable places. As a response to perceptions of "risk", the concern of resilience is often with exposure

or propinquity to sources of hazard and to an evident *status quo* of conditions and their consequences, not with the causes of that exposure, decrepitude or disadvantage nor, therefore, with the vulnerability process. This point is discussed and evidenced by Glantz and Jamieson (2000) and Tobin (1999), who show that if resilience involves a return to the pre-disaster conditions, then it is simply a return to the “resilient” conditions, including vulnerability, which led to a disaster in the first place. “Return to normal”, perhaps, should not be part of addressing vulnerability and resilience because it is far more complicated than frequently assumed, and it might not be feasible (Hills, 1998; Fordham, 1998).

“Resilience” is not an exclusive domain of natural hazards or disasters. Examples of the concept are found in share marketing, material science, engineering, psychotherapy, social science, biology, and ecology, amongst others. Even before “vulnerability” fully entered the vocabulary of natural hazards in the 1970s (e.g. Baird et al., 1975; Lewis et al., 1976; O’Keefe et al., 1976), “resilience” had entered that of ecology (e.g. Errington, 1953; Person, 1960), although many contemporary authors (e.g. Franklin and Downing, 2007) put the appearance of “resilience” in ecology as contemporary with that of “vulnerability” in natural hazards.

From an earlier ecological perspective, Hewitt and Burton’s observation (1971, 12) that hazard relates to normal community activities as much as to an “extreme event” is still relevant now (see also Hewitt, 2007). Similar perspectives assist humankind in acknowledging itself as a part of natural systems, not separate from them (Lewis, 1979b, 30), and in recognising that perceptions of “normal” include the malignant as well as the benign. Weichselgartner (2001) and Hogan and Marandola, Jr. (2005) write of the need to avoid the traditional dichotomous vision, which separates the social from the natural, but which must be linked for understanding vulnerability and resilience. Such approaches are not new. Many indigenous societies have long implemented them for building resilience and for reducing vulnerability (e.g. Gaillard, 2007; Mercer et al., 2007), whilst disaster-related anthropology has long documented them around the world (see Oliver-Smith’s 1996 review). Resilience is also a normal, long-term, community “activity”. Credence given to resilience built over centuries must similarly be acknowledged as with vulnerability. It could be termed the resilience process of the “four-hundred year disaster averted” (which is able to somewhat counter Oliver-Smith’s (1979b) “four-hundred year earthquake” disaster representing the vulnerability process).

The IPCC’s (2007, 880) definition of resilience is: “The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change.” Yet observation and analysis of the workings of ecosystems are from a removed external viewpoint, not usually an integral

component of what they observe, except by analogy. Humans are unlikely to be directly exposed to the processes they observe and for which resilience is necessary. In disaster-related work, on the other hand, although ecological processes cannot be assumed as always benign, vulnerability is a human concern about impacts upon other humans and the environment—and that can decrease resilience (see also Weichselgartner, 2001). Perpetrations by some humans being the cause of vulnerability for, along with the lack of resilience in, others should become objectives of humanitarian concern.

IPCC's (2007) definition is further weak in assuming that systems should "absorb disturbances while retaining the same basic structure and ways of functioning". If vulnerability exists, it is feasible that disturbances could be absorbed without changing that vulnerability. That makes the system both resilient and vulnerable. Instead, the goal should be to reduce vulnerability, which at times could and should entail effecting such change, with or without a disturbance or disaster.

As a useful contrast to IPCC (2007), UNISDR's definition of resilience was (UNISDR, 2008): "The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure", to which is somewhat didactically added: "This is determined by the degree to which the social system is capable of organising itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures". The importance of that definition is accepting that "changing" is an appropriate response that indicates resilience. UNISDR (2009) changed their definition to: "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions". The acceptance of "changing" has been diminished, if not removed entirely, making the same mistake as IPCC (2007). Furthermore, the introduction of "efficient" could be critiqued as implying that efficiency is valued over effectiveness.

Other interpretations of resilience more realistically relate to an already existing social or administrative structure, from which capacity is generated or in which it is inherent. As one example, the purpose of the Cranfield Resilience Centre (2007) is stated as being "to improve the capacity of organisations to respond to emergency and disruptive challenges—whether natural, accidental or deliberate." Organisations and capacity exist, but require improvement. Nevertheless, perceived causes of "emergency and disruptive challenges" are not here a matter for attention.

Community capacity for self-help expresses an optimism to counter the consequences of vulnerability, and fosters participation as amelioration of what

otherwise would be helplessness (e.g. Paton and Johnson, 2001, 2006). Resilience as an appropriate strategy against some consequences of vulnerability can be only a partial response against causative processes generated outside of a place and beyond its influence or capacity. “Resilience”, where it is implied as an appropriate counterpart of “vulnerability” (e.g. IRIN, 2009), does little to help assuage invidious processes, often unseen and unidentified, and the root cause of so many vulnerabilities. Neither vulnerability processes, nor all aspects of vulnerable conditions, can be matched by the exercise of community capacity—not even with the addition of “creativity” to its spectrum (Maguire and Hagan, 2007). Resilience, moreover and in all its contexts, may give up, fail, or be overwhelmed. It is less community capacity that is in question than the capacity of resilience itself.

Descriptions of resilience in communities of more affluent societies, such as those of New Zealand, Australia, Canada, the USA and Europe, beg the question of whether capacity for resilience can be assumed for all contexts. In some less affluent societies, aspects of traditional responses to hazards have been recognised (e.g. Gaillard, 2007), but there are doubts about whether these can always prevail (e.g. Mercer et al., 2007). Another group of researchers thought they could not: “[... The] mass of peasant farmers, pastoralists, fishermen, villagers, residents of the sprawling bidonvilles etc. [...] continue to rely on folk adjustments. But do they? [...] The interaction of the modern and folk sectors of the society and economy in fact tends to destroy folk adjustments (and) when the hazard event does come [...] it comes with killing magnitude” (Baird et al., 1975, 36). More recent work (e.g. Mercer et al., 2007, 2008; Wisner, 1995) seeks to counter the vulnerability described by Baird et al. (1975) through combining indigenous, local, and scientific knowledge bases for vulnerability reduction.

As has been described, a resilient local “seismic culture” prevailed on the Greek island of Lefkada, until eroded by external economic forces, a global “revolution” in construction, and inward and outward movements of its population. In New Orleans, following Hurricane Katrina, some inhabitants have demonstrated resilience by self-build reconstruction of dwellings on the same sites, but community resilience was powerless against long-term governmental neglect and social forces creating a New Orleans based on race and social class. In Tuvalu, what can community resilience achieve against the possibility of the country being rendered uninhabitable, through inundation or otherwise, by the effects of creeping environmental changes (Kelman, 2006)?

What can resilient communities achieve against causative processes of vulnerability which are long-term, under cover, not evident, not known, not understood, or not cared about—exemplified by corrupt construction practices or inept land-use procedures (Lewis, 2003, 2005, 2008a) being revealed only by damage to, collapse of or inundation of, occupied buildings and places? What can resilience achieve, except brief amelioration of, or temporary belief in having

overcome, pervasive helplessness? Whatever may be its capacity, human resilience has a small part to play as a counter to the accretion of vulnerability in all its dimensions from multiple and usually external sources. The probable *incapacitation* of resilience is reason enough why all causes of vulnerability and the vulnerability process must continue to be recognised, investigated and countered.

## Prospection

As vulnerability has slowly come to be taken into account, so also is it being created and perpetrated (Lewis, 1999). Relatively recent, widespread building on river flood plains across central Europe is alleged to have been a significant cause of flood losses in 2002. Former wetlands had been drained to provide more sites and rivers with high embankments “channelled” to reduce meanders, inducing sudden surges where, in the past, floodwaters would have been delayed for weeks across the plains. “Greedy mayors” are blamed for destroying forests to provide building land for “holiday homes on the banks of rivers” and enticing their own populations onto the floodplains (Pearce, 2002).

In the United Kingdom, in July 2008, families in Gloucestershire and Hull, whose houses were flooded in July 2007, continued to live in unhealthily overcrowded temporary accommodation (e.g. caravans/mobile homes), with the prospect for some of doing so even further into the following year (Morris, 2008). Extraordinary resilience has been displayed by the owners of newly built houses, all with “planning permission” and bought in good faith, against an inexorable hazard made manifest by decisions beyond their influence and about which they could do nothing. Meanwhile, housing construction on flood plains continues against specialist advice to central and local governments (e.g. Werritty, 2006).

Resilience programmes are established at UK Cabinet (governmental) level (UK Resilience, 2007), for London (London Resilience Team, 2007), for most UK counties and for specific hazards (e.g. UK Flood Forum, 2007). In circumstances such as the examples described, it is difficult not to conclude that policies for community resilience in places of identifiable vulnerability obscure more challenging, underlying political issues. Community resilience papers over the cracks of vulnerability without solving the deep challenges.

Hogan and Marandola, Jr. (2005, 458) recognise “vulnerabilized citizenship” as combinations of vulnerability and citizens’ rights. They describe a “new apartheid”, as suffered by asylum seekers in the UK through exclusion, threatened deportation and exploitation, adding “a new layer of vulnerability to that experienced earlier in the places from which they fled”. Additionally, asylum seekers have been reported as having been dispersed to socially dangerous parts of the UK (Travis, 2007). Recognised as a shortcoming of citizenship, those now identified as demographically vulnerable may be environmentally vulnerable too;



those not yet citizens being rendered vulnerable by withdrawal of public service benefits (Travis, 2009; PAFRAS, 2009). Vulnerability to one thing may be vulnerability to another (Lewis, 1999), but, as Hogan and Marandola, Jr. (2005, 460) conclude, “more encompassing perspectives [...] might be relevant to the concept of vulnerability”.

Similarly, Manyena (2006, 438) identifies the UK resilience programme as a means of improving response capabilities of emergency services, although “community involvement is not part of the United Kingdom government’s resilience strategy”, except in the event of overstretched services. “Some see the resilience programme as a new version of the paternalistic civil defence approach”, (Manyena, 2006, 438) now applied in the wake of terrorist threats to preserve the *status quo*, that will entrench exclusion and take away attention from inequality, oppression and entitlement, a recipe for proneness and vulnerability.

What usefulness resilience has is restricted by perception and capacity in any response it may make to interpretations of risk. While a necessarily internal function of its community, its identification of externally perpetrated causative processes of vulnerability would require extension of capacity beyond the confines of its place. Additionally and frequently identified by vocal and local but impotent opposition, resilience would have to become more meaningful for the achievement of the removal, reduction or amelioration of external sources of risk. Currently, resilience is not intended to function in this way and it does not but, as it appears, neither do many other local participation programmes. Processes of exploitation and marginalisation, and the exercise of commercial and political greed, are all causative factors, yet may be regarded as “external” to consequent vulnerable conditions, in the same way as they are “external” to community capacity.

Transparent and good governance is crucial for avoiding covert activities and processes, which may give rise to vulnerable conditions and can become an exemplar and conditioner for the functioning of society at large on behalf of its places as well as its people. Bad governance facilitates and obscures malfeasance, discrimination, deprivation, disadvantage, exploitation, poverty and, in consequence, vulnerability in its many guises. Frequently but not always related to poverty, vulnerability is more often the result of failures at all levels of government and governance. In these circumstances, “resilience” is a mollifying palliative for bad governance, amongst other long-term societal trends, behind which more severe perpetrations of vulnerability are permitted to persist. At best, resilience is fragile amelioration for those suffering from long-term permanent vulnerabilities perpetuated for the advantage and profit of others.

Despite its basis in the literature, insufficient concern is being displayed against long-term, causative processes of vulnerability, its past consequences and those of its futures. Increased understanding of vulnerability during past decades means that it should, by now, be possible to implement effective measures against

its conditions, causes and perpetrations. Without such measures, efforts towards risk management and post-disaster assistance will continue only in parallel with the creation and manufacture of vulnerability. Little account of futures or of pasts is taken in analyses of the vulnerable *status quo*, or of long-term consequences of actions outside of its narrow purview. Future exposures will be considered negligent, as are exposures now of past shortcomings. Disaster reduction must maintain temporal awareness of pasts and futures, as well as of the present, so that as vulnerability processes come to be recognised, conditions and consequences are reduced. Meanwhile, resilience fiddles on the re-arranged deckchairs while Rome burns.

Effective resilience programmes require wide-ranging inclusion of, for example, training in vulnerability accretion as a process, central and local governance, environmental and institutional management, development and building construction and maintenance, amongst other activities, by which community groups become aware of the wider contexts that may impinge negatively upon them, and of ways to counter them. Part of that task will be further exploring the challenges of identifying a “community”; for example, Cannon (2007) suggests that communities do not exist and that, even if they did, they would contain the bad as well as the good. “Community” has become embedded in much vulnerability discourse and, while the concept has merit, its limitations in reality are rarely explored. Communities are not usually coherent entities, with both people and place being divided into subgroups through criteria such as gender, age, religion, affluence, and ethnicity (people), plus type of land occupied, proximity to transportation routes, and dwelling form (place), with connections amongst these categories. Additionally, local knowledge expressed through community consultations designed to elicit a coherent “community view” is sometimes shown to be counterproductive to management decisions or to be outright erroneous (Kennedy et al., 2008; Tibby et al., 2007).

Divisions within communities are often used to permit some members of the community to make decisions beneficial to themselves, irrespective of the consequences, positive or negative, for others in the same community. Thus, the vulnerability process continues, with one section of the community, nominally those with decision-making power or control, perpetuating the vulnerability imbalance to favour that section of the community. Such divisions can be delineated by place, whether that be informal dwellings in contrast to gated sections of a city, or the poor being forced onto floodplains, unstable hillsides, or volcanic slopes.

Aiming for resilience amongst the people—sometimes suggested as needing to occur through initiatives of empowerment, control, and wealth re-balancing, amongst others—cannot occur without factoring in place. Seeking running water and proper sewage for informal settlements helps to reduce the people’s

vulnerability; but only to some extent, if the hill on which they reside collapses in the next rainfall or volcanic eruption. The causes of vulnerability include dynamic, place-based traits; so also must resilience-related endeavours be in their widest contexts of dynamic human ecologies of catastrophe.

That people are the cause of most vulnerability for other people suggests a serious ecological failure in sectors of humankind who create and who fail to redress the vulnerability of others. Considering the study of organisms' ecological relations with one another and with their surroundings, human ecology is the relation of people with one another and with their environments. Where that relationship is destructive, changes are required. If all of humankind came to regard itself in humility as a part of the environment rather than as separate from it, as many indigenous societies explicitly do and as many non-indigenous societies explicitly do not, then "human ecology" would be superfluous. It would, in fact, be a truism, defining humankind.

Yet some suggest that humility is not required. Instead, a form of arrogance is needed to show leadership and forthrightness in identifying the perpetrators of vulnerability, holding them to account, and improving the situation to those who are disempowered. That view is overly simplistic. It is more important to seek a balance, recognising that all people have different forms and levels of control, over themselves and over others, and of being controlled by others—plus noting that vulnerability is not just about people, but is also about place. Few absolutes exist. In the same way that communities do not exist, absolute empowerment and absolute disempowerment do not exist. The poorest, most marginalised people, such as isolated islanders, have shown remarkable resilience and ability to control their own vulnerability (Gaillard, 2007; Kelman, 2007; Lewis, 1999).

Human ecology has a long history of being made relevant to vulnerability and resilience (e.g. Aguirre, 1993; Burton et al., 1968; Hewitt, 1983a; Tobin, 1999). That endurance indicates the usefulness of continuing to apply it to disasters and to disaster risk reduction. In fact, the phrase "disaster ecology" appears to have first emerged in Lewis (1980) and then reappeared in publications such as Kelman and Lewis (2005) and Lewis and Kelman (2009). Could there be a basis for useful conversation?

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