

EDITORIAL

Disaster resilience: a bounce back or bounce forward ability?

Introduction

The debate on disaster resilience has continued to grow, albeit at a slow pace, since the 2005 World Conference on Disaster Reduction held in Kobe, Hyogo, Japan. One of the most important and striking aspects is that despite the conceptual differences, the resilience and vulnerability paradigms are still locked together and are increasingly being treated as if they are one and the same. The reason for this is not a difficult one. Resilience and vulnerability are viewed as opposite sides of the same coin (Twigg 2007). However, the notion of “bounce back” differentiates resilience from vulnerability. The “bounce back” notion is important to the extent that it liberates resilience from the vulnerability conundrum. Yet, the “bounce back” notion does not seem to acknowledge that disasters are accompanied by change.

This paper posits that resilience should be viewed as the ability to “bounce forward” and “move on” following a disaster (Manyena 2009). Three arguments are presented in this paper. First, the “bounce forward” ability conceptualisation of resilience has implications on disaster research and scholarship. It helps us to re-think about the underlying philosophical arguments, particularly those around structure and agency. Secondly, resilience has temporal and continuity elements, which have implications for pre- and post-disaster planning, including community continuity recovery planning. Lastly, the “bounce forward” conception has psychological implications. It is optimistic, with a potential of assisting disaster victims and service providers to adopt positive behaviour changes prior to and after the disaster.

The ascendancy of the disaster resilience paradigm

The disaster resilience paradigm has gained currency since the start of the new millennium. Central to the resilience paradigm is its stronger emphasis on capabilities and the ways people and communities deal with crises and disasters (IFRC 2004, UNISDR 2005). A resilient community is ideally the safest possible disaster-prone community that has the ability to overcome the damages brought about by disasters either by maintaining their pre-disaster social fabric or by accepting marginal or larger change in order to survive (Gaillard 2007). Manyena's (2006) deconstruction of resilience illustrates that its evolution has not been straightforward.

The current interest in the resilience concept for disasters mirrors shifts in thinking about disasters. Furedi (2007) traces three major shifts in disaster “thought”: *as Acts of God; Acts of Nature and Acts of Men and Women*. From time immemorial, disasters were explained as *Acts of God's* anger towards his people implying that nothing could be done about it. During the Enlightenment, with the emergence of science, the causation of disasters shifted to *Acts of Nature*. Disasters were blamed on hazards, and hazards were

disasters *per se*. It was not until the 1970s that disaster causation shifted from *Acts of Nature* to *Acts of Men and Women*. O'Keefe *et al.* (1976) argue, in *Taking the naturalness out of natural disasters*, that disasters were neither *Acts of God* nor *Acts of Nature* but a consequence of vulnerability. Wisner *et al.* (2004) described the 1976 Guatemala earthquake as "class-quake" due to its selective impact on the poor, as it left the upper and middle classes virtually unscathed. The emergence of the resilience concept has shifted the focus to self-reliance as a counter to vulnerability, particularly for the poor and the marginalised.

Whether resilience and vulnerability are one and the same concept or discrete constructs is still contested. Like most social science constructs, there is some confusion over the definition of resilience. Twigg (2007) argues that the terms "resilience" and "vulnerability" are opposite sides of the same coin, but both are relative terms. In this instance, vulnerability and resilience are assumed to lie on the same continuum but on the opposite poles, with vulnerability being negative and resilience being positive (Manyena 2006). In this way, it might be appropriate to assume that when reference is made to vulnerability, there is an assumption that one would also be referring to resilience as dual terms meaning the absence of the other means the presence of the other.

Notwithstanding that both constructs may rely on the same factors such as demographic, social, cultural, economic and political aspects, the two are arguably discrete constructs (Manyena 2006, Gaillard 2007). The original notion of resilience, from the Latin word *resilio*, means to "jump back" or "bounce back". This refers to people's recovery within the shortest possible time with minimal or no assistance at all. The "bounce back" notion differentiates resilience from vulnerability, implying that the two constructs are discrete.

The "bounce back" ability has its limitations as well; it may be more acceptable to elastic material than to human systems. Elastic can be stretched (not necessarily in a disaster situation) and can return to its normal position without change. That disasters are accompanied by change is a given. Take a few examples. The Bam earthquake, which occurred on 26 December 2003, in south-east Iran, claimed more than 35,000 lives, another 23,620 were injured, almost 20,000 homes were destroyed and essential services including water supply, power, telephone, health care, main roads and the city's only airport were crippled (Akbari *et al.* 2004); this led to major shifts in the social, economic and physical environments. In Sri Lanka, the 2004 tsunami had a major impact on the fishing community. Some 90% of the surviving fishing community lost their boats, fishing nets and homes; this transformed their lives and livelihoods (Venkatachalam *et al.* 2009). In Zimbabwe, a decade-long complex political emergency has triggered disasters such as a cholera epidemic. This affected some 100,000 people and claimed 4200 lives between mid-2008 and mid-2009 (Nelson 2009); this severely disrupted social and economic stability. In Japan, the 2011 earthquake and subsequent tsunami caused severe damage to homes, businesses and infrastructure, including the almost total destruction of the Fukushima nuclear power plant. In terms of change, the plight of the Fukushima nuclear plant has caused those countries that operate such facilities to re-think about their power-generation strategies. As Paton and Johnston (2006) argue, these examples show that the "bouncing back" neither captures the changed reality nor encapsulates the new possibilities opened by the changes wrought by a disaster:

This usage [of bounce back], however, captures neither the reality of disaster experience nor its full implications. Even if people wanted to return to previous state, changes to the physical, social and psychological reality of societal life emanating from a disaster can make this untenable. That is, the post-disaster reality, irrespective of whether it reflects the direct consequences of disaster or recovery and re-building activities undertaken, will present community members

with a new reality that may differ in several fundamental ways from that prevailing pre-disaster. It is the changed reality (whether from the disaster itself or social response to it) that people must adapt to. Paton and Johnston (2006: 7–8)

Arguably, the “bounce back” notion does signal change. But returning to the original position does not signal change. It might mean a return to vulnerability and bouncing back to the conditions that caused the disaster in the first place; they may re-create and strengthen the pre-disaster structures and institutions. Thus, the “bounce back” notion can be associated with strengthening existing structures and institutions to resist or withstand disasters, which may also increase community vulnerability rather than their resilience to disasters.

Resilience should be viewed as the ability to “bounce forward” and “move on” following a disaster (Manyena 2009). Although this might be considered rather simplistic, there could be merit in this thinking. As disasters can be conceptualised as a catalyst for change (Paton and Johnston 2006), the “bounce forward” notion encapsulates social engineering, if not community agency, in change processes within the context of new realities brought about by a disaster. Community agency through advocacy programmes may influence disaster risk governance where institutions maybe reorganised to increase their capabilities to deal with the changing nature of risk. What is fundamental here is that the disaster risk governance structures and institutions are subordinate to the community agency. Changes that may take place after a disaster are not by chance – they are a result of rational choices made by the affected communities and should be transformative. They can include physical, economic, political and psychological issues. Thus, disaster resilience could be viewed as the intrinsic capacity of a system, community or society predisposed to a shock or stress to “bounce forward” and adapt in order to survive by changing its non-essential attributes and rebuilding itself.

Conceptualising resilient or “bounce forward” abilities

A fundamental issue in conceptualising “bounce forward ability” is the evaluation of current response systems and, more broadly, how we approach prevention and preparedness. The ways in which societies have prepared themselves to deal with uncertainties and change have shaped norms, values, customs and practices and governance systems. Adjusting to changing circumstances and learning from experience have always been part of human development. Arguably, we have always recognised risk as a part of the everyday life and that often risk-taking can bring rewards. The ancient Egyptians lived with the risk of annual flood. But the floods regenerated their agricultural capacity: an example of both risks and rewards. In instances where a rapid change has occurred, there has been little time for social learning processes to re-shape preparedness strategies. Today, the state, in many instances, has taken the lead in dealing with hazardous events and rapid socio-technological and economic changes. There has been a drive to make people feel “safe”. Alongside this, there has been a drive towards the centre and the imposition of a command and control structure.

This drive to centralism can clearly be seen in the way the UK response to disastrous events has developed after the World War II. This approach was dominated by a civil defence perspective that was shaped by the threat of a nuclear war. This gradually shifted to a civil protection perspective. Following the collapse of the Soviet Union, a series of disasters leading up to and following the millennium led to a root-and-branch reform of civil protection. Though resilience was used as a term to characterise the reform process, in reality, the focus was on institutional resilience (O’Brien and Read 2005, O’Brien 2006). This is a narrow interpretation of resilience, as it restricts the focus

to an internal view of the capacities needed. For routine events, such as traffic accidents, this can be very effective and there are many examples of emergency responders who are being able to cope in quite complex situations and able to use their expertise and specialist equipment to good effect. This view of deploying the right assets to deal with a particular event and then returning to base sees resilience as the ability to bounce back and prepare for the next event. Any post-evaluation will be restricted to evaluating how well, or otherwise, the event was dealt with. This is single-loop learning or error correction. This does not mean that single-loop learning is not an important part of the preparedness of the response function. It certainly is. But single-loop learning is practitioner focussed and does not allow a broader and deeper consideration of the role of the response function. It is the double-loop or organisational learning that questions the values, assumptions and policies that led to the actions in the first place. If there is scope to modify these, then the organisation is able to adapt to the signals from both internal and external environments. In short, it exhibits adaptive capacity to changing environments. This is a pre-disaster planning that recognises the importance of adjusting to new post-disaster realities. This is recognition of resilience as a bounce forward ability.

The case studies of the Fire and Rescue Service (FRS) in the UK and the post-disaster response to the 2004 tsunami in Somalia show resilience as a “bounce forward ability”. The UK case study shows how a change in the legislative framework enabled the FRS to focus on prevention, an example of a questioning approach to the function of the service: in short, double-loop learning. The Somalia case study shows how a community was able to reflect on the impact of tsunami. This led to a greater understanding of their vulnerability, the starting point for building resilience.

UK FRS case study

The UK Fire Service prior to 2004 was regulated under the Fire Services Act of 1947. The Act laid down arrangements that were geared primarily to the needs of the Second World War: it prescribes staffing levels; the location of the firefighters, stations and appliances; and exactly how many appliances should be used to attend to a fire and within what time frame.

In 2001, the UK government established the Arson Control Forum, a government-led multi-agency body, to lead the fight against arson. Arson had been an increasing problem, particularly vehicle arson, since the 1990s. Other studies showed that 50% of all fire deaths occur before the fire brigade is even called. The FRS Act 2004 replaced the 1947 Act and put the prevention of fires at the heart of legislation by, for example, creating a new duty to promote fire safety and by providing the flexibility for fire and rescue authorities to work with others in the community to carry out this duty, as studies showed that 50% of all fire deaths occur before the fire brigade is even called. This has seen a marked shift in the operational mode of the FRS.

This initiative coupled with the 2004 Act saw a surge of effort at fire prevention through working with young people via the Arson Task Forces. There has been a dramatic drop in the number of arson incidents. Since then, campaigns aimed at vulnerable households have signalled a shift to a more proactive approach. This engagement with the public and emphasis on prevention are evidence of double-loop learning at the organisational level in response to changing signals.

Somalia case study

On 26 December 2004, near the coast of Sumatra in Indonesia, the world's most powerful earthquake in 40 years struck. The earthquake triggered a series of large tsunami waves

across the Indian Ocean. Somalia was the worst affected country in Africa. Approximately 650 km of Somalia's coastline in the state of Puntland primarily between Hafun (Bari region) and Garacad (Mudug region) were devastated.

The tsunami resulted in the death of some 298 people, thousands of homes were destroyed and an estimated 103,083 people were displaced (CRED 2011). Water, sanitation and hygiene facilities were destroyed or contaminated. Food stores were swept away, and roads and other infrastructures were damaged. Thousands of fishing boats were lost and fisheries were severely affected. These impacts devastated lives and livelihoods, making vulnerable people even more vulnerable and in need of emergency assistance.

The fragile livelihood strategies in these areas, heavily dependent on fishing, severely limited the coping strategies. The tsunami struck during the December peak fishing season, leading to devastating livelihood impacts. The majority of the households reduced the number of meals per day, sold assets and requested credit for food and water in order to cope. Many men migrated to urban centres that were less affected by the tsunami in an attempt to seek employment. Others managed to secure money from the Somalia diaspora. The majority of those affected, however, had insufficient food and contaminated water sources that led to a steep increase in waterborne diseases such as dysentery.

In the immediate aftermath of the tsunami, aid agencies began trucking water and food to the affected towns and villages. The lack of infrastructure and insecurity in the region meant that aid was slow to arrive and always inadequate compared with the needs of the people. Eventually, towns and villages began developing recovery strategies with aid agencies with the aim of rebuilding facilities and livelihoods.

A priority for all communities was rebuilding households and restoring water sources. Communities began rebuilding their homes, some with assistance from international organisations. However, none rebuilt their homes in the same location. All communities relocated their households further inland.

We've seen the damage the sea can do to us, our entire community, we cannot let that happen again we have to build our houses in a safe place now, a safe distance from the sea.(community member of Aris town in Puntland, Somalia, 2006)

Norwegian Church Aid (NCA) was one of the humanitarian organisations that responded and worked throughout the affected region. Prior to commencing any work in the villages and towns, NCA conducted detailed discussions with communities in order to identify their needs and capacities. NCA's aim was simply not to rebuild livelihoods or facilities, but to build resilient livelihood assets. NCA appreciated the communities' experiences. It believed that to build resilient communities, these experiences had to be fully incorporated into the recovery process. An example of this is the re-establishment of access to safe water sources.

The pre-existing water sources for most of the affected communities were single open fresh water springs. After NCA had conducted community discussions, it was evident that collecting water from single fresh water springs limited the number of users and placed great time demands on women and children. The water was often contaminated as the source was not protected. NCA, together with the local communities, established new water points. These water points (several per community) were located further from the beach to ensure protection from future tsunamis and were covered to prevent contamination. If one water point were to become contaminated or dysfunctional, the communities would still have access to other safe water sources. This is an example of community continuity recovery planning that recognises the need to move forward to build resilience.

Commentary

The changes occurring in the UK mirror changes at the global level. The 1990s were declared as the international decade for natural disaster reduction. The Yokohama Strategy, 1994, marked a conceptual shift from reaction to prevention – a movement from disaster management to disaster risk management. Following the Yokohama Strategy, the Hyogo Framework for Action (HFA) 2005–2015: “Building the Resilience of Nations and Communities to Disasters” was adopted at the World Conference on Disaster Reduction (UNISDR 2005). The HFA clearly signals a move from a command and control environment to a community-based approach within an enabling policy framework. It seeks to promote an inter-disciplinary approach to disaster risk reduction and gives a specific example by stating that this must promote the integration of risk reduction associated with existing climate variability and future climate change into the strategies for the reduction of disaster risk and adaptation to climate change (UNISDR 2005).

It is clear that a more proactive approach to preparedness through resilience building signals a shift in thinking as shown in the Somalia case study. This has implications for individuals, communities and organisations. It also signals how we approach learning. Practitioners must still improve their skill levels as well as learn new skills. But it is at the community and organisation levels that new approaches to learning are needed. There is considerable expertise in organisational and social learning and capacity building that can be used to effect these changes. But there is a clear need for research into the ways in which disaster risk reduction techniques can be incorporated into climate adaptation.

In this edition, Edgeworth explores local coping strategies in disaster risk reduction. Using examples from rural Bangladesh, he argues that community health can be substantially improved by the community by itself by building responsible resilience planning that focusses on contentious issues such as the level of outcome and price of inputs. He further argues that it is not a universal solution, but in places where effective government structures are absent and little external finance is available, self-help efforts owned by the community produce favourable health outcomes.

Using agriculture in Indonesia, Mills and his co-authors provide an example of an approach to resilience that demands a bounce forward ability. A series of shocks, including the 2004 Asian tsunami, left a local livelihood system with a challenge not only to build back better, but to build differently. The key to the difference was an emphasis on diversification across both livelihood system and environment. One central issue of the resilience strategy was to address a wider range of market options indicating that building is a “within and without” community strategy.

Haidera *et al.* explain fresh water challenges in Yemen against an uncertain social environmental future. On the basis of the mathematical modelling that was driven by stakeholder considerations, they argue that water deficits will increase under every scenario. This raises not simply supply issues of increased vulnerability to water shortage, in a situation where accelerating climate change exacerbates accelerating drought conditions, but also issues such as what does water, or broader service, resilience mean especially to poor urban populations.

da Costa Silva raises the linkage between resilience and environmental justice. In a wide-ranging comparative analysis of community-based watershed management initiatives in Central and Latin America, she explores the issues of justice and equity. The conclusion is bold in that she argues that environmental justice frameworks can better inform decisions, while subtly suggesting that such frameworks largely provide methodologies for action rather than delivery rights.

Conclusion

The idea of vulnerability strongly links poverty to disaster causation (O’Keefe *et al.* 1976). Many attempts have been made to differentiate vulnerabilities, for example, by age, gender and ethnicity. On the bottom line, however, whatever be the subconstructs, poverty is the explanation for vulnerability.

Resilience again has been differentiated along the lines of age, gender and ethnicity. But one of the reasons for the idea of resilience continuing to be the “flip side” of vulnerability is that communities tend to be richer communities that can afford mitigation and adaptation efforts. The notion of bounce forward is to see disaster as an opportunity for local livelihood enhancement rather than as a simple return to *status quo ante*.

In many ways, the idea of vulnerability and that of resilience are like that of sustainability – there are many definitions, but this definition is necessary to maintain the broad church of progressive practice. More particularly, resilience planning, like sustainability, is already being practised by communities, even though they do not call it that.

As this issue goes to process, there is a growing conversation on linking resilience planning to the environmental justice movement. In the past, attempts have been made to expand human rights to specify that no one is put at risk. These attempts faltered on the non-justiciability of such a legal right, that is, the inability to take the case to court to seek redress.

The strength of the environmental justice movement has been essential to successfully use community mobilisation to confront individual company contamination at specific sites, for example, the Toxic Soup in the Mississippi River, known as the Cancer Alley. The environmental justice movement has been less successful at addressing broader situational problems such as climate change, and to date, there is no jurisdiction for justiciability of such global problems. The challenge of resilience is a twenty-first-century challenge to define institutional, legal and social learning processes that promote poverty alleviation and thus reduce vulnerability.

Siambabala Bernard Manyena

School of Built and Natural Environment

Northumbria University

Newcastle upon Tyne, UK

Email: bernard.manyena@northumbria.ac.uk

Geoff O’Brien

School of Built and Natural Environment

Northumbria University

Newcastle upon Tyne, UK

Phil O’Keefe

School of Built and Natural Environment

Northumbria University

Newcastle upon Tyne, UK

Joanne Rose

School of Built and Natural Environment

Northumbria University

Newcastle upon Tyne, UK

References

- Akbari, M.E., Farshad, A.A., and Asadi-Lari, M., 2004. The devastation of Bam: an overview of health issues 1 month after the earthquake. *Public Health*, 118 (6), 403–408.
- CRED, 2011. *EM-DAT: Somalia Natural Disaster Profile* [online]. Available from: <http://www.emdat.be/result-country-profile> [Accessed 30 March 2011].
- Furedi, F., 2007. The changing meaning of disaster. *Area*, 39 (4), 482–489.
- Gaillard, J.C., 2007. Resilience of traditional societies in facing natural hazards. *Disaster Prevention and Management*, 16 (4), 522–544.
- IFRC, 2004. *World Disaster Report 2004: Focus on Community Resilience*. Geneva: International Federation of Red Cross and Red Crescent Societies.
- Manyena, S.B., 2006. The concept of resilience revisited. *Disasters*, 30 (4), 433–450.
- Manyena, S.B., 2009. *Disaster resilience in development and humanitarian interventions*. Thesis (PhD). Newcastle upon Tyne, Northumbria University.
- Nelson, E., 2009. Beyond cholera – the Zimbabwe health crisis. *Lancet Infectious Diseases*, 9 (10), 587–588.
- O'Brien, G., 2006. UK Emergency Preparedness – A step in the right direction? *Journal of International Affairs*, 59 (2), 63–85.
- O'Brien, G. and Read, P., 2005. Future UK emergency management: new wine, old skin? *Disaster Prevention and Management*, 14 (3), 353–361.
- O'Keefe, P., Westgate, K., and Wisner, B., 1976. Taking the naturalness out of natural disasters. *Nature*, 260 (1), 566–567.
- Paton, D. and Johnston, D.M., 2006. *Disaster Resilience: an integrated approach*, Charles C. Thomas Publishers, USA. ISBN 0-389-0763-4.
- Twigg, J., 2007. *Characteristics of a disaster resilient community* [online]. Available from: http://www.proventionconsortium.org/themes/default/pdfs/characteristics/community_characteristics_en_lowres.pdf [Accessed 15 September 2010].
- UNEP 2005. *National Rapid Environmental Desk Assessment - Somalia*. UNEP, Kenya [Online]. Available from http://hqweb.unep.org/tsunami/reports/tsunami_somalia_layout.pdf [Accessed 30 March 2011].
- UNISDR, 2005. *Building the resilience of nations and communities to disasters: Hyogo Framework for Action 2005–2015*. UNISDR [online]. Available from: www.unisdr.org/we/inform/official-doc/L-docs/Hyogo-framework-for-action-english.pdf [Accessed 30 January 2011].
- Venkatachalam, A.J., et al., 2009. Risk factors in relation to human deaths and other tsunami (2004) impacts in Sri Lanka: the fishers' eye view. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 19 (1), 57–66.
- Wisner, B., et al., 2004. *At risk: natural hazards, people's vulnerability and disasters*. 2nd ed. London: Routledge.