

Local Knowledge about Natural Hazards and Disasters in the Literature

The critics of early research into natural hazards and disasters

In the 1960s and 1970s, geographers studied the impacts of natural disasters on people mainly from a technical perspective. The dominant approach to natural hazards and disasters focused on hazards as physical events requiring scientific and technical solutions (technical or technological fixes). Natural hazards were understood in the context of simplistic determinism (where physical processes determine human actions) and linear causal relationships from geophysical events to impacts to human responses. People were also assumed to be the masters of their fate to a much greater degree than now seems valid (White et al. 2001). They were assumed to live in vulnerable conditions due to a lack of knowledge (Schilderman 2004, p 416). In the 1980s and 1990s, researchers in the field of natural hazards and disasters began to criticise the deterministic, ahistorical, and asocial concept of hazards and disasters and its dependence upon the use of choice and decision models (Hewitt 1983; Gardner 2002). As Messer (2003, p 3) reports:

“As recently as the late 1990s, scholars complained of the absence of much social science research on disasters in developing countries.”

The growing focus of research and development is the need to take the human dimensions of natural hazards into account (including local knowledge, practices, and perceptions) in disaster management (Anderson and Woodrow 1989; Johnson et al. 1982 in a case study documenting local knowledge of landslide hazards in the Kakani-Kathmandu area, Nepal). In fact, the studies on hazard perception emerged in the US from Gilbert White's group at Chicago in the 1960s. This work initially focused on wheat farmers' perceptions of and responses to droughts in the Great Plains of North America (Saarinen 1969). However, a lot of this work degenerated into standardised questionnaire surveys and 'official' analyses applied in developing countries (Personal communication, Ken Hewitt).

The hazard perception studies show that natural hazards are non-linear and complex events shaped by and resulting from the combination of not only geophysical and meteorological factors but also (and mainly) political, economic, sociocultural, and psychological (or perceptual) phenomena and factors. The social dimension of risks and hazards is important because local communities see them through a cultural lens; and this is dependent upon their view of the cosmos and accumulated experience (Linkenbach-Fuchs 2002, p 7).

The case of flood management in Bangladesh can illustrate this shift in thinking. The ineffectiveness of flood management in Bangladesh has been attributed to the focus on large-scale technological solutions which tend to emphasise short-term, sectoral approaches. A growing literature has been promoting the importance of building upon local knowledge and local adaptive strategies for improved flood management in Bangladesh (Paul 1984; Rasid and Paul 1987; Haque 1988; Zaman 1991).

Research into natural hazards and disasters has been influenced also by the international arena. In 1989, the United Nations General Assembly proclaimed the decade from 1990-2000 as the International Decade for Natural Disaster Reduction. The United Nations recognised the disastrous impacts of natural hazards on vulnerable communities and, by the year 2000, all countries were encouraged to have comprehensive national assessments of natural hazards and risks integrated into national development plans and to address long-term disaster prevention, preparedness, and community awareness in mitigation plans. In reality, funds dropped – mainly because of the Gulf War (1991) and a series of natural disasters in developed nations, including the Kobe earthquake. The Kobe earthquake demonstrated that developed nations could not prevent disaster and that relief aid was inappropriate. In 1994, the United Nations World Conference on Natural Disaster Reduction in Yokohama called for paying more attention than before to traditional knowledge and community-based action. The Kobe earthquake also led to a switch from a technocratic view of natural hazards to a focus on vulnerability. (Personal conversation, Ken Hewitt)

From natural hazards to vulnerability and resilience

The criticism of research helped to generate a growing interest in the concept of vulnerability in hazard literature (Blaikie et al. 1994) as elsewhere (and it is also a central component of the sustainable livelihood approach) and especially led to a focus on reducing social and community vulnerability and examining its links to disaster and risk responses. Some researchers argue that the focus should be directed towards vulnerability and local coping strategies instead of hazard per se (Battista and Baas 2004). In any case, the shift towards the vulnerability perspective in research into natural hazards and disasters encourages looking at disasters through the lens of socioeconomic and political structures and processes. The recognition is growing that research should broaden its analytical scope to include questions of sustainable development such as livelihoods, poverty, governance, equity, climate change (which some research links with the threat of increased extreme events), and natural resource management (UNEP 2004; Van Aalst and Burton 2002; Sudmeier-Rieux et al. 2006).



Local community standing on a bridge destroyed by flood, Singyali VDC, Mohottari District, Nepal

The maintenance of sustainable livelihoods is based on people's adaptation to environmental changes (including natural hazards) together with economic and political changes (Batterbury and Forsyth 1999). Researchers examining adaptations to natural hazards and disasters study adaptation in terms of social and power relationships also (political-economic perspective) and not only from a biological point of view (i.e., adaptation perspective) (Goodman and Leatherman 2001, p 21). Some studies focus on community adaptation to climate variability and climate change (Allen 2006; Ahmed and Chowdhury 2006; Rojas Blanco 2006; Hageback et al. 2005; Stiger et al. 2005) and multiple stresses, including natural hazards (McSweeney 2005). That said, these aspects still lack visibility in mainstream literature (Flint and Luloff 2005) and are neglected in practice, reflecting the compartmentalisation of science and the difficulty of overcoming it; and this is also reflected in government and donor budgets and the challenges surrounding (real) inter- and cross-disciplinary studies.

Recently, resilience literature has examined the processes of adjustment and self-organisation from a more dynamic and complex perspective than the adaptation literature (IFRC 2004; Gardner and Dekens 2007). The resilience perspective also attempts to investigate adaptation to change from a more positive angle than the vulnerability perspective, focusing on people's strengths rather than on their vulnerabilities.

Overall local knowledge was absent from the early mainstream research into natural hazards and disasters. Then, the change from a focus on natural hazards to vulnerability

and resilience was accompanied by a growing recognition of the importance of local knowledge and practices. Yet, even though research and development organisations acknowledge the existence and importance of local knowledge and practices related to disaster preparedness, in practice little documentation of its application through official channels exists. Ultimately, the growing interest in local knowledge, including in disaster management and preparedness, should be understood in the context of governance issues and the movement to participatory approaches in development and resource management.