What is Local Knowledge?

What people know is influenced by (and influences) their beliefs, lifestyle, and behaviour. To understand local knowledge one has to understand and account for people's ways of knowing (i.e., different knowledge types) as much as their practices and beliefs, perceptions, and values. Understanding all these is crucial because it can explain why people do things the way they do.

Knowledge types

The interaction between conventional science and local knowledge is not new and the history of science demonstrates that the two knowledge systems have often been intertwined (Agrawal 1995). In the Himalayas, as elsewhere, trade routes; military and scientific expeditions; and political conquests have contributed to the exchange of knowledge (Linkenbach-Fuchs 2002). Local knowledge has never been isolated: it has always been connected to other places and other types of knowledge. If, as Agrawal argues (1995, p 433), the division between indigenous and scientific knowledge is artificial, then it makes more sense to talk about multiple knowledge types (or dimensions) which can serve different interests and purposes.

Man carrying wooden log, towards Kalash Village, Lower Chitral. Local knowledge of appropriate building styles can also contribute to disaster preparedness.

Local knowledge on disaster management has often been associated with local, **technical knowledge** only (Thrupp 1989), probably because it is the most visible and concrete aspect of local knowledge. Local, technical knowledge includes local methods of construction, use, and combination of specific materials for domestic and local buildings. Aside from local, technical knowledge, there are other types of knowledge such as environmental and agricultural knowledge, sociocultural knowledge, and historical knowledge. This local, non-structural knowledge is not easily identified by outsiders, because it is closely embedded in people's livelihoods and worldviews.

Environmental and agricultural knowledge or ecological knowledge is the most intensively studied (Antweiler 1998, p 10) and refers to local knowledge of natural resources (ICSU-UNESCO 2002). Langill (1999, p 4) discusses the importance sustainable development researchers give to it. Studies have highlighted the richness of local environmental knowledge (e.g., soil classification, land-use categories, and weather patterns) and have shown how local methods, such as agroforestry and polyculture, contribute to conservation of ecological diversity.[3] However, they fail to make the link between aspects of it (e.g., soil classification, land use, and weather patterns) and natural disaster management. (See more on this aspect in Chapter 7.)

Sociocultural and historical knowledge is often ignored by studies of natural disasters, despite its importance (Ellis and West 2000). Sociocultural knowledge includes knowledge related to the sociocultural environment in its broadest sense, viz., social, political, economic, and spiritual aspects of life (Langill 1999; Antweiler 1998). According to Ellis and West (2000, p 13), it can be argued that local knowledge is embedded within both the historic understanding of (natural hazards and disasters) and current actions and events. Local history about social relations is important because it can influence the way people perceive and respond to natural hazards.

Knowledge about development projects refers to people's beliefs about the outside world (the regional, state, and international actors likely to intervene in disaster responses) which affects how they respond to interventions.

There are various classifications of knowledge, in general, and local knowledge, in particular, in the literature, reflecting the complexity and diversity of different modes of knowing by communities, households, and individuals. Importantly, this classification of local knowledge types (or knowledge dimensions) is not comprehensive. Other types of knowledge that are not well studied include, for example, local knowledge about conflict resolution or management and organisational and management knowledge (Antweiler 1998, p 10). Overall this classification tries to simplify the reality and

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[3] For examples of case studies on local knowledge related to land management in Nepal, see Muller-Boker (1991) who studied local soil classification in the Gorkha and Chitwan districts and Johnson et al. (1982) who studied local categories of land use in the Kakani-Kathmandu area. For examples of case studies on local knowledge related to landscape conservation in India, see Ramakrisnan 2001; Farooquee 2004. A World Bank report by Van Aalst and Burton (2002) provides a general overview of the linkages between natural resource management and disaster management. For examples of case studies on local climate knowledge and weather forecasting in agriculture – a field that has been poorly investigated according to Materer et al. (2001) – see Jaarsma et al. 2001 [Mozambique]; Kanani 1999 [Gujarat, India]; Materer et al. 2001 [Lesotho].

presents a false dichotomy between various knowledge types, which are, in the context of local knowledge, not separate but closely intertwined. The important lessons here are that a diversity of local knowledge exists and that most of it remains untapped despite growing evidence in the literature that it can play a valuable role in disaster risk reduction, directly or indirectly.

Did you know? Attitudes towards local knowledge

Historically, science-based attitudes (and including to some extent Asian attitudes) towards local knowledge have shifted from denial to romanticisation and, today, a growing acceptance. A great deal of knowledge has been based on local knowledge from various parts of the world to push the frontiers of scientific eclecticism forward. But often little credit was given to the origins of this knowledge. Scientific field work by Europeans during **colonisation** extracted the local knowledge of Asian countries. Local knowledge, and especially folk taxonomies, were systematically extracted, codified, and re-appropriated as western knowledge in numerous encyclopaedic inventories (Ellen and Harris 1996, p 14).

The **mid-1960s** symbolise the rediscovery and romanticisation of local knowledge through the stereotype of 'primitive' people in harmony with nature. Certain sectors in western society questioned the ability of science and technology to solve all problems. People started to react against the remoteness of science and its perceived arrogance and negative technological outcomes (Ellen and Harris 1996, p 16). At that time, a western counter-culture movement marked the rediscovery of local people and knowledge. Notions of traditional, indigenous, or 'primitive' peoples imagined an idyllic harmony with nature which western civilisation had lost – however, recent research shows that the relationships between traditional societies and civilisations and the environment have been anything but idyllic and well informed (e.g., Mann 2006; Diamond 2005; Williams 2002).

From the 1970s and 1980s to date, advocates of the importance of local knowledge slowly began to infiltrate the mainstream. A counter culture against the tendency to see top-down approaches and mega-projects as the only ways towards development promoted the philosophy that 'small is beautiful' (Schumacher 1973). The importance of accounting for and integrating local knowledge into development projects, including decision-making processes, gained recognition among academia, international development and funding agencies (e.g., World Bank, UNESCO, FAO, IDRC, UNEP), NGOs, and among policy-makers and governments. Various initiatives from the international community have recognised the role of indigenous knowledge in sustainable development, particularly in developing countries (e.g., Our Common Future (WCED) 1987, United Nations 1992 Earth Summit, Agenda 21, 1999 World Conference on Science, Johannesburg Plan of Implementation, Millennium Development Goals). This change in attitude has led to a new discourse on participatory and decentralised development (Agrawal 1995) and maybe disengagement of the state in favour of the growing role of the NGO sector.

Did you know? Common and specialist knowledge

Local knowledge is scattered and it is dispersed institutionally: it is located at the individual and household level as well as collectively through community stewards and other key social actors (e.g., shamans, elders, local religious and political leaders, and healing artists). As such, one can distinguish between common (or everyday or public) knowledge (i.e., held by the whole community) and specialist knowledge (i.e., retained by a few local experts, e.g., healers with specific medical expertise and knowledge of local curative plants; knowledge of local plants known only by women; or knowledge of crops known only by men) (Langill 1999; Berkes 1999; Antweiler 1998; Materer et al. 2001). Blaikie et al. (1994, p 62) discuss specialist knowledge and its relationship to different resources. Langhill (1999, p 14) also distinguishes common and specialist knowledge from shared knowledge, that is knowledge held by many but not all (e.g., knowledge of herders, hunters, or farmers). Wisner and Luce (1993) found it useful to know why some people in a community:

"Are unable to avail themselves of [a particular] knowledge and practice [such as traditional building construction]; [that is to focus on] the vulnerability of people, not of systems."

Did you know? Experiential and transmitted knowledge

Local knowledge derives more from memory, intuition, and the senses than from the intellect. It is always a mixture of experiential and transmitted knowledge. Experiential knowledge refers to knowledge gained through experience (i.e., historical observation). Transmitted knowledge refers to knowledge gained from one generation to another (as such local knowledge is also 'multigenerational' by nature – Berkes 1999). Often, transmitted knowledge does not meet with the same problems of legitimacy in the community as experiential knowledge, because the former has been culturally internalised (Personal communication, Dr. James Gardner). As such local knowledge is not easy to document because it is often invisible (see box on 'invisibility').

Practices

We mentioned that what people know is influenced by (and influences) what people do, that is their practices; in other words:

"local knowledge in addition to being 'in people's heads' is embedded in individual and group action." (Ellis and West 2000, p 14)

Local practices are not static traditions; they are rather complex adaptive responses to external and internal changes that have evolved throughout the generations from trial and error (Berkes 1999). People's adaptive or coping practices can protect them from the impacts of natural hazards (i.e., preventative measures), and can help them to reduce the negative effects of natural hazards (i.e., 'protective measures', 'risk reduction mechanisms', 'impact-minimising strategies', 'risk-spreading strategies'),

or help them to escape certain peak values or their consequences (i.e., 'avoidance strategies'). Local practices are mediated by local institutions and associated power relations (see box on 'local institutions', this chapter, and the section on 'power relations', Chapter 6). Local practices may be different from one level to another. Certain disaster preparedness practices may be found only at the household level while others may be found only at the community or village level. Practices may differ from one social group to another according to factors such as age, gender, profession, caste, or ethnicity. Sinclair and Ham (2000) documented adaptive strategies related to household livelihoods in the western Himalayas and found that practices varied within villages according to socioeconomic, age, or caste status, among others, and that some strategies were interdependent upon others. Some practices may be directly designed for disaster preparedness; others may be designed for other purposes (e.g., making a living) but may contribute indirectly towards disaster preparedness. Some practices may help people to deal with natural hazards in the short term; while others may help them to be prepared and to adapt in the long term. Similarly:

"Some effective short-term human adjustments might actually increase the long-run vulnerability." (White et al. 2001)

Not all adjustments to natural hazards are environmentally sustainable. Batterbury and Forsyth (1999, p 9) found that successful adaptations did not always protect the environment in general and did not benefit the community as a whole. Local strategies could also be weakened by socioeconomic changes. Similarly, not all adjustments to natural hazards are socially equitable. According to Dr. Ken MacDonald (personal communication):

"Some of the very practices that do reduce risk can be remarkably oppressive in other ways."

The example cited is the marriage of women outside of their villages to establish a widespread family security network, whether the women are content or not. Another example comes from Schware (1982, p 215) in West Bengal, India, who cites the example of flood warnings being taken as an opportunity to impound floods to use on high-yielding paddy by some while it aggravated damage downstream for others.

Did you know? Survival and risk trade-offs

Survival might not always be the primary objective of coping strategies in the face of adverse events because vulnerable people may seek other human needs such as the receiving of respect, dignity, and the maintenance of family, household, and community cohesion (Blaikie et al. 1994, p 69). Lessons from research on coping strategies for famine revealed that people might choose hunger to preserve assets for the future (Frankenberger et al. 2001, p 68).

Natural hazards are often one among many other stresses that communities face, some of which might be perceived as more immediate threats than infrequent natural hazards.

Hall and Davis (1999), during their research in the Karakoram in the 1980s, found that priorities focused on everyday concerns affecting people's health, family life, and the all pervasive issue of livelihood security. People would live on steep slopes and reserve flat land for cultivation, risking infrequent landslide hazards (Hall and Davis 1999, p 3). Risk trade-offs present difficult choices between long-term protection against natural hazard risks and immediate livelihood gains such as income or food security.

Did you know? The rules of the game

Local practices are mediated by local institutions and associated power relations. Local institutions constitute a set of formal and informal rules, norms, values, organisations, and patterns of behaviour that define who is allowed to use what kind of assets (e.g., natural, sociocultural, economic, or political) at what time and in what circumstances; for example, through monitoring, sanctioning, and conflict resolution mechanisms. At the local level, various types of institutions exist. They can be classified in terms of social, religious, political, judicial, and economic characteristics (Appiah-Opoku and Hyma 1999) or in terms of familial, communal, social, and collective characteristics (Bingen 2001). Examples of traditional institutions are chieftaincies, clan heads, councils of elders, headmen, and other village assemblies. Institutions shape every aspect of a livelihood system[4] from the type and amount of assets individuals, households, and organisations can build upon, together with the creation, transformation of, access to, returns from, and accumulation or reduction of assets (Bingen 2001) to their livelihood strategies (e.g., whether people manage to diversify, or innovate, intensify), their livelihood outcomes (e.g., whether people manage to increase social services or promote a certain type of rights), and the 'vulnerability context' (e.g., crisis, shocks, or trends) people face. Compared to central (state) institutions, local institutions often derive their strengths from proximity, responsiveness to social pressures, and adaptation. However, depending upon the type and scale of natural disasters local institutions may not be able to respond effectively (Battista and Baas 2004, p 13). Further, local institutions are not always equitable. For example, the poorest might not be able to invest the same amount of time and money as other members of the community in local institutions, and this means they benefit less from risk-sharing mechanisms associated with the institution (Messer 2003). Although local institutions are a key aspect of improved disaster preparedness, studies on the role of local institutions in disaster management, in general, and disaster preparedness, in particular, are limited (exceptions include Messer no date; Battista and Bass 2004; and Yongong et al. 2001). Yongong et al. (2001) found that in Northwest China informal herder groups, called 'zhangquans', play a key role in disaster preparedness, risk management, and poverty alleviation. Each group is composed of about four to five households. Together they organise grazing, exchange labour, share information, protect animals from theft, address risk avoidance, organise meetings, and make decisions. For the prevention of snow disasters, herders' groups prepare joint emergency plans and organise pasture movements if an emergency situation arises. In order to protect animals from theft and predators, households within the herders' community organise themselves in rotation. Such inter-household cooperation can help to reduce the risk for individual households.

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[4] A livelihood system refers to a combination of modes of livelihood at one time – e.g., farming, migrant labour, and informal activities (Murray 2001).

Belief systems

The filters of human action

"Perhaps the most fundamental lesson of traditional ecological knowledge is that worldviews and beliefs do matter." (Berkes 1999, p 163)

Local belief systems are understood here as the combination of people's beliefs (e.g., sociocultural and religious belief systems), worldviews (i.e., ways of perceiving the world), values and moral principles (e.g., respect, reciprocity, sharing, and humility), and ethics. Belief systems shape people's understanding, perceptions, and responses to natural hazards. These perceptions are mediated by cultural interpretations, in combination with a range of other factors proper to each community and household at a specific time and place which will influence how people are going to prepare themselves or not.[5] These factors influence people's perceptions and responses to natural hazard risks: for example, from the outside two similar households might face the same risks; however, they will have different perceptions of risk and address it differently (Heijmans 2001, p 1).

These factors (or filters) influence local knowledge and practices on disaster preparedness in a complex way and can act simultaneously (or not) as amplifiers and/or attenuators of natural hazards. For example, the nature and behaviour of hazard events may be perceived as 'chronic', 'part of normal life', 'rare', 'new and never experienced locally', 'an unavoidable climatic or seismic extreme', or a 'just form of retribution meted out for a community's transgressions' (Bankoff 2004, p 92). Cronin et al. (2004) in a case study in Ambae Island, which has the largest and most hazardous of Vanuatu's volcanoes, describe the failure by scientific experts (such as volcanologists) to understand and account for local beliefs and how this has contributed to the failure of volcanic hazard education brought from outside. They argue for the establishment of a common ground for communication about hazards in which the principles of considering local views can be used to adapt and communicate scientific, hazard information to non-scientists anywhere. Understanding local beliefs, perceptions, and values is crucial because it provides insight into why people do things the way they do. In that sense, "with some groups, how people say things (and in which context they say things – Author) may be more important than what they say" (Berkes 1999) because the outcome can be interpreted in many ways unless you understand the context.

The attenuators and amplifiers of natural hazards

Belief systems can help to create shared cultural attitudes and community spirit, which in turn can help the community to withstand natural hazards and risk disasters. Collective ceremonies may even simulate elements of natural disasters through symbolic actions and act as cathartic events for the whole community. For example, during Lavak

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[5] Other factors include life stage; age; gender; class; ethnicity; life history; formal and informal education; local knowledge and information; peers' influence; experience of past hazards; perceived personal exposure to hazards; existing power relationships, community processes, and shared experience; past experience with outsiders such as local government officers and aid agencies; warning signals; other communities or households affected; wealth; labour; social networks; links to town and administration; and so on (Wisner 1998; Heijmans 2001; Flint and Luloff 2005; Swift and Baas 1999).

Natek, an important festival of the Kalash community, an ethnic minority in Chitral District in Pakistan, men and boys run down the hills and shout. If they see a fox, it is believed to be a sign of a good year. During that time, women watch the scene from the village. Ceremonies, such as the Lavak Natek can be interpreted as symbolic methods of dealing with anxiety. This festival can be interpreted as a collective forecasting ceremony; a way of helping the community overcome the anxieties associated with future uncertainties (including uncertainties about the weather and natural hazards). The ceremony helps to reduce stress and the psychological distress associated with living with risks and uncertainties (Dekens 2007b). It is a means of incorporating these times of great stress or loss into a community's collective memory in such a way that they are rendered manageable on an individual human scale. Such ceremonies permit the incorporation of hazards into daily life within the structure of people's everyday cultural construction of reality, and they can contribute to the normalisation of natural hazards (Bankoff 2004).

Religious activities, such as prayers and collective gatherings, can also be part of long-term coping strategies to natural hazards by providing rules for wise natural resource management. Examples can be found in relation to water management: in Bali local priests used to monitor and manage the local irrigation system, the 'subaks', and this ensured the maintenance of biodiversity and helped avoid localised landslides (Lansing 1987); in the Newari communities of the Kathmandu valley, temples are found close to ponds and they are used to ensure and mediate the sustainable management of water for drinking and irrigation. The key point was the ethics or the codes promoted by socioreligious symbols in the use of natural resources (Berkes 1999, p 22); in other words, in practices.

Just as all adjustments are not sustainable, not all beliefs are sustainable or relevant. They can act in a negative or dysfunctional way. Some values have led to massive environmental degradation and the collapse of entire societies (Diamond 2005)! For example, the ritual of slaughtering goats in the Kalash communities to prevent floods confers ritual, symbolic values on goats. They are used for ceremonial purposes only and never sold (no economic value is attached to goats). Hence it might prevent the community from having sufficient food or cash income during or after hazard events. The entire flock of goats is ceremonially slaughtered whenever a Kalash person dies – which has led to the local saying, that "the death of a Kalash is Kalash destruction." (Personal communication, Mr. Aziz Ali)

Another example of the negative effects of local beliefs can be found in Howell (2003). The author describes indigenous early warning indicators of cyclones in Bangladesh and how the custom of 'purdah' can prevent women from having access to information related to cyclone forecasts. According to the custom of 'purdah', women are not allowed to visit the market (where radio warnings might be heard or news discussed) or to publicly interact with other men. They are also:

"not allowed to leave the house without their husband's permission, even to go to a cyclone shelter: their long hair and saris hamper survival strategies such as swimming and tree-climbing." (Howell 2003, p 2)

The various examples above demonstrate how local beliefs (and related practices) can have both positive and negative effects on disaster preparedness. Disaster preparedness programmes need to capitalise on cultural aspects that contribute strengths and moderate them when they create obstacles (Bankoff 2004).

Belief systems are also dynamic and constantly changing due to internal and external influences. Wisner and Luce (1993, p 129) report how the idea of scientific progress promoted by development workers and others has created a mistrust of time-tested practices.

All three dimensions of local knowledge (knowledge types, practices, and beliefs) are inter-related and influence one another constantly. Examples show that these dimensions can contribute towards disaster preparedness and can integrate elements that are obstacles to preparedness. Local knowledge and knowledge in general emerges from a dynamic process of knowledge creation, use, management, and transmission influenced by a combination of internal and external processes. In fact, local knowledge is disappearing and being created all the time (Berkes 1999). Building upon local knowledge and practices requires an understanding of the transformation processes involved.

Did you know? Invisibility

In terms of local knowledge, practices (especially non-technical practices), and disasters, vulnerable groups are often invisible to outsiders and even to some extent to insiders. Indeed:

"most people are not aware or fully aware, certainly never constantly aware, of the influence that their native or adopted world view has on the choices they make and the way they question reality." (Wisner 1998, p 2)

In some contexts, women (and other marginalised groups) are invisible both geographically (their duty is to stay at home usually and they are not allowed in public places) and (consequently) ideologically (their knowledge does not count) and this is despite the fact that they may suffer disproportionately in disasters (Metha 2007) – this is all most ironic considering the anthropomorphisation and feminisation of disasters in many cultures (Bankoff 2004)! These invisibilities are related to the nature of local knowledge: holistic and closely embedded in people's livelihoods and worldviews; often taken for granted by insiders; and scattered and institutionally dispersed – which often makes it difficult for people to talk about what they do to prepare themselves for disasters. Disaster preparedness strategies are often shaped (and hidden) by complex processes of oral knowledge transmission, knowledge internalisation, power relations, and rapid change and adaptation. It means that local knowledge is very dynamic; some practices can change quickly, which may explain why they can remain unnoticed and understudied (Blaikie et al. 1994, p 62). For example, even if local activism is going on (e.g., community sandbagging against floods) it is not documented or made visible and most NGOs do not have time to document such aspects. The 'invisibility' of local knowledge, practices, and vulnerable groups also refers to many practices that can contribute to disaster preparedness but which are not directly orchestrated towards it. Therefore what remains 'invisible' to outsiders includes not only practices per se but also their linkages with disaster preparedness. Further, many localised and recurrent hazards that contribute to the gradual erosion of people's livelihoods do not receive political attention and media coverage because the death toll at a particular time is not high enough to make the front page. Interestingly, disasters are also the evidence of failure and can reveal to outsiders what was invisible before: that is pre-existing vulnerabilities and vulnerable groups (Hewitt 2007).

Did you know? Bounded rationality

Some disaster preparedness strategies at the household and community levels (e.g., 'running away' when the water rises during the monsoon) might seem like 'common sense' or 'universal knowledge'. However, it is important to recognise that people have bounded rationality; that is, people's rationality is limited to their own information and beliefs (and the tradeoffs discussed earlier). Bounded rationality might be driven by economic reasons. For example, it has been widely reported that some people leave their houses only as a last resort because of fear of thieves. In other contexts, cultural and religious factors also play an important role. A man interviewed in a village prone to flash floods in the Chitral District of Pakistan described how his wife ran away from the house as a flash flood was coming, but then, seeing many people on the street, decided to go back to get her veil. She was trapped then in the house, but did not die. Her husband likes to believe that the veil saved his wife from the flood; seeing her return to get it as a protection factor rather than as a risk (Dekens 2007b). This story illustrates the point that 'running away' when the water starts rising might not always be accepted as common sense depending on religious and cultural beliefs and practices. And this is also observed in flood hazard situations in most western contexts where people tend to prefer to stay with their assets; and this means that laws had to be passed to forcefully evacuate people in such circumstances (Personal communication, Dr. James Gardner).

Did You Know? Fatalism

The perceived fatalism of the rural poor in the Himalayas, and in Asia generally, in accepting natural hazards as the 'will of God' or as a 'punishment delivered by God' cannot be understood simply as the equivalent to the western connotation of fatalism, which is associated with passivity, resignation, and apathy (Hutton and Haque 2003; Schmuck-Widmann 2001; Bankoff 2004). In fact, labelling these attitudes as fatalistic reflects a misunderstanding of other worldviews influenced by many Asian religions such as Hinduism, Buddhism, and Taoism and a lack of reflexivity. As Wisner (1998, p 3) puts it:

"Fate is, actually a very western idea rooted in the classical Greek and Roman world. It is something personal and often, as in the classical tragedies, something connected to a flaw in one's character. By contrast, disasters just happen in the mainstream Asian view, the way that trees, birds, day, and night happen and in the way that people are born, grow old, and die."

As such what is perceived by outsiders as fatalism is in fact part of a sociocultural and psychological coping response for people who have no, or who lack, the individual choice and power to reduce or eliminate psychological distress during stressful situations. What it means is that:

"the perceived powerlessness among the poor reflects […] a realistic perception of their position vis-à-vis dominant resource relationships." (Hutton and Haque 2003)

Pratt (2002, p iii) also highlights in a case study on community response to drought in Kenya how the act of praying often involves other actions, enabling the community to come together and be better prepared mentally and sometimes physically as well. He reports how the process also involves a:

"mutual assessment of the resources currently available to communities for strategic redistribution or redeployment in the event of drought, as directed by elders in the communities."