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Disaster and Culture literature

Disaster and culture had its heyday in the 1960s and '70s, with American scholars like Moore, Anderson and Wenger and Weller, but fell out of fashion, except for a great book by Hoffmann and Oliver Smith on Cultures and Catastrophe in the late 1990s.

The theme returned to the limelight when the Federation of Red Cross and Red Crescent Societies made it its theme in the 2014 World Disasters Report and its companion volume, 'Cultures and Disasters' edited by Fred Krüger et al. We acknowledge and build on their excellent work, taking it to Europe and seeking to give it some practical 'hands and feet'.

As none of these books pays a lot of attention to urban disaster or to Europe, we hope our handbook goes some way towards filling this gap.

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SECTION I. CULTURE AND RISK

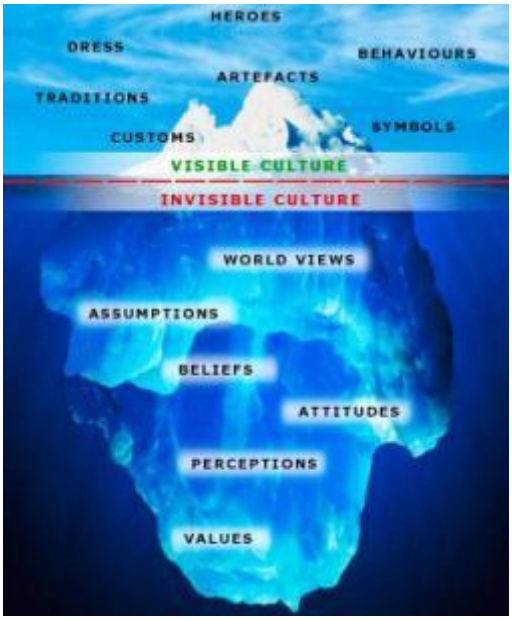
1 How to recognize culture

Karen Engel, Jeroen Warner

- Cultural aspects are relevant and common to a particular group and subsequently binds the group members together;
- Culture is meaningful and highly valued by a particular group;
- Culture is profoundly implicated in motivating people to think, interpret and judge the world and do the way they do;

- Culture is learned. It is transmitted from generation to generation and internalized to such an extent that it becomes 'second nature' and is largely taken for granted;
- Culture is arbitrary and not 'natural'. The actual nature of a group's culture is the result of their decision-making processes. It could have been completely different;
- Culture encompasses 'problem-solving tool[s] that enable individuals to survive in a particular, environment' (Schein…);
- People can belong to different cultural groups;
- Culture and power are intimately linked.

(Inglis 2005:9-10)



Different cultural elements can be differentiated (Thomala et al. 2015: 9):

- Manifestations, such as art, ideas, communication, artifacts, tools, rules, and laws;
- Beliefs, values, and worldviews, such as ideologies, assumptions, and attitudes;
- Knowledge, such as scientific knowledge, local knowledge, and indigenous knowledge;
- Social structure, such as agency, relationships, social networks, social control and power;
- Behavior and practice, such as customs and norms, rituals, and traditions.

Some of these elements are more visible than others. Most are invisible and so fundamental to people that they are difficult to negotiate about.

While useful, these definitions are from the outsider view. From an insider perspective, culture is 'that what which is considered „normal"; 'the way it's done 'round here'. Much of culture is hard to identify and explain to others, because it has been internalized, comes naturally, and this self-evidence facilitates routines and social organization. This is particularly difficult for newcomers who are not socialized into the culture and will have to discover it most likely through a process of trial and error. Generally, cultural differences come to the surface most frequently when two cultures come together and collide. In case of a collision, there will most likely be a class ('ouch!') moment accompanied by friction and possibly even more overt conflict. This is because we inevitably see and judge our environment, our fellow human beings and ourselves through the lens of our own cultural background. When for instance, two aid workers work together on a case but learn that they interpret the risks of the situation completely different. Is one wrong and the other right? Or are they interpreting the situation in accordance to different norms and values.

To meaningfully recognize culture it is therefore key to be continuously aware of one's own reactions towards others and in particular the question marks that appear when interacting with others. One functions, interprets and more importantly judges surroundings and others in accordance to one's own culture. However, what may be normal to one might not be to the other. So when interacting with others, be alert to feelings of perplexity and shock and before escalating the situation to hostile confrontation, wonder what it is that puzzles you and engage in an inquiring fashion with the other. Are there cultural assumptions underlying their act and/ or your reaction?

Such question marks generally point at a possible cultural difference. Why don't Dutchmen wear helmets when cycling through heavy traffic? Why do many Byzantine and Ottoman buildings have beams placed intermittently around walls of buildings (Bankoff 2014: 58)? Are they decorative or might they even have a seismic function? Such observations and questions allow one to learn about the environment one is in. One could, for instance, learn that when a community has areas where homes are built on stilts that flooding is a relevant phenomenon for the people of the community. In other words, recognizing culture will not just enable one to increasingly cooperate or understand why cooperation with others is maybe difficult, but it will also open the door to learn more about the environment one is in and the way people interpret and deal with that environment.

Beware: introspection can be confrontational. You will be looking into your most inner self and possibly have to question fundamental assumptions which have been, up and till that day, the basis of your essence, while realizing that they are arbitrary and can, if you want to, be different. The key is then to identify and reflect on the cultural differences and then find a way to move forward that is acceptable to both parties. That is when it gets difficult, especially when such inner elements as values and norms are being questioned.

There are various social interactions that require thoughtfulness in light of the possible cultural implications they could entail. Firstly, one has to be aware that people are generally part of different cultures. As a result, even though you are part of the same organization and share the organization's culture, you might still experience culture clashes because competing cultural values or norms take the upper hand. For instance, families can have their own cultures and in a specific situation this culture's elements might be considered more weighty than for instance the organization's. In situations in which the organization's culture does not provide sufficient guidance a member may resort to his or her own cultural values that would.

Part of these types of cultural interactions are interactions between people with different ethnic or religious backgrounds within one organization. However, people with the same religious and ethnic background can be part of quite different cultural groups. Secondly, cultures can interact between groups when working with different organizations. Civil and military organizations for instance can have very different cultures. A mission for a military unit, for instance, starts when you leave your home and ends when you get back home. For a civil organization, a mission is when you leave your quarters in the host country to, for example, do search and rescue activities and ends when you get back to your quarters. This different interpretation of a mission can cause friction (read more on civil-military cooperation). Similarly, there can be serious cultural clashes between a professional organization and a community one.

Culture is quite functional: it enables people to interpret and judge the world around them, i.e. order, and function more effectively without continuously having to cognitively engage with one's surroundings. It prevents one from being taunted by hyper-reflection like the centipede in the following poem:

'The Centipede was happy quite, / Until a Toad in fun / Said, 'Pray, which leg goes after which?' / And worked her mind to such a pitch, / She lay distracted in a ditch / Considering how to run' (Katherine Craster 1841-74).

Furthermore cultural elements have a cultural logic and function. In case of hazards for instance, communities tend to cultivate elements that will enable them to understand and deal with the events and prevent, as much as possible, dismay. As a result, culture affects how people understand risks and guide the way they act in light of these. A collection of cultural elements cultivated to deal with a recurrent hazard is known as a disaster subculture. Disaster subcultures emerge when communities are repeatedly affected by potentially disastrous hazards and members take each disastrous occasion to learn and improve their capabilities to deal with these phenomena so that

they will be less disastrous in the future. Since these elements have meaning and are valued by communities experiencing disaster risk, they have to be taken into account when concerned with Disaster Risk Reduction.

They can be valuable resources, but they could also be the cause for strenuous relationships. They can for instance be the reason why a certain community does not want to implement some solution experts have come up with.

Since it is known that cultural interactions will be an important part of one's work in DRR and the success of one's interventions will stand or fall by the way they are dealt with it is worthwhile looking into cultural implications in 'peacetime'. As such, one can determine to what extent culture can be an opportunity or is rather a challenge to be dealt with and identify ways to deal with these. When you have to do this during an emergency, you are too late. In an emergency there is no room for hyper-reflection and the possible immobilization this might entail. People have to largely turn to automated behavior, particularly also to have enough cognitive space to deal with unexpected situations. This means one should focus on encountering and dealing with different cultures in the preparation phase. This can be done in different ways. For instance, one could include in every after-action report an appraisal of cultural matters. Also one could make it part of the preparation phase by including a cultural appraisal when doing for instance a network analysis. Key tools are generally, qualitative in-depth and group interviews and continuous interaction and reflection with relevant people.

It is also recommended to not just think of potential 'problem groups' when it comes to planning and preparing for disaster. There are cultural groups networks that could contribute to one's DRR efforts. Take for instance, boy and girls scouts, voluntary rescue brigades and hobby groups like electrical clubs or radio aficionados. Such groups might have certain knowledge and technical skills that can prove really helpful during a disaster.

1.1. Technoculture

Complex technological systems tend to be seen as the most optimal way of dealing with various natural hazard related problems. While these can be of help, a sole dependence on them can have adverse effects. In Dordrecht, for instance, the decreasing exposure to flooding has brought complacency and forgetfulness. In the South of the Netherlands, however, (non-life threatening) flooding used to be frequent and as a result relevant risk awareness, knowledge and capacities tends to be more widespread there than in the west of the Netherlands that has already been fully diked up. Today embankments have been installed in the southern province of Limburg and communities there are being told flooding will no longer be part of their lives. This will most likely lead to a reduction of flood preparedness, even though the possibility of flooding remains. The probability might be small, but is still above zero (Engel et al 2014).

Unnecessarily exposing people to disaster risk is not an option. However, believing that one can master nature is not either. A middle road would be to cultivate an intelligent mix of technical and human capacities that will enable not just lead to higher levels of resistance, but also significant levels of resilience. Also, to ensure technical systems are properly embedded in a community and do not force communities into highly dependence relationships with for instance experts, especially when it comes to early warning systems. In light of DRR it worthwhile that people can interpret their environment and in particular threats that might be imminent. Often time is of the essence and it is thus disadvantageous for people to have to wait for vast complex socio-technical systems to inform them. Such systems generally require time that is unavailable and in addition often encompass

numerous linkages that can fail. Better to make tools or facilitation availability for community members to be actively involved in their own safety and prevent a false sense of security from arising, for example, Dutch dike teams (trained to put metal sheets in front of vulnerable buildings) and 'dike armies' (patrolling the defences when the weather gets rough).

Suggestions for Further reading

It is recommended to map local skills and repertoires, as well as the 'risk landscape people perceive. There are good guides to particulatory action research

You may fiund the Reachingresilience.org handbook useful.

A Swiss example:http://www.polsoz.fu-berlin.de/ethnologie/personenliste/froemming/Participatory-Mapping-of-local-Disaster-Risk-Reduction-Knowledge_-Reichel_Froemming.pdf

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2. The role of beliefs and religion in disaster

The relationship between culture, disasters and risks is not always seen as straightforward. Yet, what we believe in, which truths do we held as valid, which behaviours we deem as normal and what defines our human condition has great implications for our involvement and interpretation of disastrous events.

Beliefs, in particular religious beliefs, have numerous attributes and functions. They are heterogeneous and dynamic, as they change and develop through time and space under the influence of the societies they take root in. Beliefs mediate the relationship between human beings and their environment, are used to make sense of the world and of experiences, and thus shape how communities perceive and react to disastrous events. It is thus important to consider these beliefs throughout the disaster cycle.

2.1. Religion and disasters

Faiths and convictions are sensitive topics which are usually not addressed upfront, especially in emergency situations. They challenge rational assumptions and because they are intangible, they can be difficult to understand and to recognise. Yet as they form a major part of culture, beliefs influence all aspects throughout the disaster cycle:

- how communities look at risks and disasters;
- how they respond to it;
- how they recover from it;
- their capacity and eagerness to implement disaster risk reduction strategies.

Religion has an active role in bringing people together. Religion can act as a resource for people by giving access to networks of support and by providing ways of coping with disasters. Beliefs provide a framework for understanding, interpreting, preparing and responding to disasters. Natural hazards-induced disasters are sometimes interpreted across cultures and cults as divine expressions of God's punishment, anger, or retribution for human sins.

This influences the capacity of people to respond. On one hand, fatalistic understandings can support passive attitudes and can deter people from evacuating a risky area or implementing preparedness measures. On the other hand, faith-based interpretations can also help people being more aware of their vulnerability and provide grounds for mitigation practices. Indeed, certain communities can value being proactive and engaging in preparedness activities as a way of negotiating with the divine and influence the risk.

Research in Italy, Hungary and Turkey has shown that groups understanding disasters such as earthquakes as caused by fate or God were not well prepared, because they did not believe having any control over the event. This behaviour is referred to in psychology as external locus of control, where people place outcomes outside of their reach and thus the feeling of having no responsibility in it deters them from taking preparedness actions. Religious beliefs can also work in the opposite way, by fostering internal locus of control, where each individual is in ownership of his own fate or karma. Regarding climate change mitigation for example, Buddhist notions of interconnectedness and mindfulness can be operationalised to foster better practices towards sustainability (Daniels 2010; Oral et al. 2015)

2.2. Working with beliefs and religious groups

Faith-based community groups have their own modes of organisation, practices and communication means. Accessing religious groups for disaster preparedness and DRR is therefore crucial for disseminating information.

As a starting point, it is important to consider religious groups both as targets and resources for disaster management.

Some tips to consider when working with religious communities:

- Involving groups representatives in discussions and planning about DRR
- Connecting with faith leaders to build trustful relationships and facilitate the implementation of a DRR framework with inputs from both civic and religious actors
- Adapting language and material: speaking the same language than partners and affected populations helps in securing good communication
- Developing tools for training faith leaders and for securing outreach and continuity within communities (ex: disaster preparedness as part of school curriculum)
- Developing a form of religious literacy by being aware of appropriate customs and behaviours (ex: clothing, behaviour towards women, food prohibition and dietary laws regarding food provision...)

Faith leaders are valuable resource persons as they can act as brokers between aid organisations and communities. They benefit from the community's trust and thus it can be profitable to be introduced by them to the people and to learn from them about the group's culture before starting to work. Evacuation instructions, for example, may be better accepted and followed when enacted by a priest, an imam or a rabbi than by a state representative or an aid worker.

Community level religious disaster response to floods in rural England

Somerset is a rural county in South Western England. From mid December 2013 towards March 2014 the area experienced severe flooding. Although affected areas varied throughout the months, the area flooded went up to 12,200 hectares. About 200 homes were directly affected. Daily changes in water height as a result of tidal impacts added to the uncertainty. After a visit to the area, Peter Maurice, the Bishop of Taunton (Somerset's county town) called for a briefing on the floods. Subsequently he started correspondence in the form of open letters and a number of bishops started to co-ordinate together. As a result of the correspondence goods like bedding and clothes were brought to the church and there were donations like eggs from a local farmer, and free fruits and vegetables. Further practical and financial generosity was shown by many other churches and faith groups nationally including Jews and Muslims. The latter visited to express solidarity and donated 16000 pounds to the Somerset Community Foundation. The Bishop commissioned a report entitled 'Fact, Feeling, Future' (Gurner 2014) that includes both prayers and recommendations to help inform diocesan response in the mid to long term. The report quotes local parishioners and clergy who feel they were attended to too late and inappropriately by the government and the Environmental Agency. In addition, it provides some recommendations of what could have been done by the diocese, such as the forming of coordinating commissions and voluntary contact persons in case of future disasters.

In the same way, religious buildings are strategic locations as they are home to important practices and eventually social activities by religious communities. Churches, temples, mosques and synagogues are perceived by their attendees as safe places, where they may seek refuge or advice. Therefore, contingency plans could eventually consider them as places to accommodate displaced people, or distribute food, while paying attention to the fact that these spaces do not have the same impact for people from different cults.

In the aftermath of disasters in Indonesia, Islamic Relief and Cordaid launched a pilot project on the important role of mosques, especially in the emergency phase, where they were used as shelter by vulnerable communities and turned into aid centres of coordination and distribution. The pilot built on a network of 6 religious places in 2 districts in addition to Disaster Management Teams comprising 150 members. It targets poor and disaster prone communities, faith leaders, activists and government disaster management authorities at the district and provincial level. The project aims at strengthening the capacities of existing DMT and DRR networks through training and enhancing community awareness and participation in the project by engaging local people in DRR activities (mock drills, simulation exercises, hazard mapping, etc.) while looking out for expansion possibilities towards other actors and religious places (Cordaid 2014)

2.3. Potential cultural assets and obstacles of religion in the context of disaster

Based on the few examples in the literature, it is possible to provide an overview of the potential and complex assets and obstacles of religion for people in disaster contexts.

Before discussing the potential cultural assets and obstacles of religion for individuals in the context of disaster, a few things that are mentioned by Kemkens (n.d.) need to be taken into consideration. Firstly, these assets and obstacles do not suddenly arise in times of disaster, but they may become

relevant and apparent related to resilience and vulnerability. Secondly, it is important to keep in mind that the religious beliefs and practices of individuals are not static but dynamic. Thirdly, due to contextual dynamics, no generalized conclusions can be drawn on whether a particular person will actually benefit from, or be hindered by, his or her religion in times of disaster. Finally, a number of religious dimensions, such as beliefs, rituals, and social networks mediate the potential assets or obstacles of religion, making it difficult to simply point at causal relations.

Religious groups are usually well integrated within local communities and thus often able to respond to disaster in a very short time span. Moreover, these organizations often benefit from high levels of trust among local communities (Gaillard and Texier 2010). For example, in New Orleans, based on the role of the Catholic Church, the Village de L'Est -where a Vietnamese immigrant community lives and that was severely flooded during Hurricane Katrina – was able to return and rebuild more efficiently than less damaged and richer neighborhoods. This neighborhood rebuilt so fast due to a combination of the strong social ties amongst the Vietnamese immigrants and the local church that had ties as well to the Vietnamese community. The church shared goods and played a central role in the coordination for recovery. Together with the community they organized political action to protect the area from outside development and zoning changes (Aldrich and Meyer 2015).

Another example comes from the contribution of mosques in cultural, economic, social and political aspects of the lives of earthquake affected communities in Pakistan (Cheema et al. 2014). During response and relief, mosques –as they were located in the center of communities and had loudspeakers- functioned as initial contact point, as spaces for social coordination and integration, as spaces where vulnerable groups were looked after, as central points for providing information to the community, and as institutions that provided spiritual support. During recovery, reconstruction and rehabilitation they continued to be spaces for both psychosocial and livelihood support (ibid). Importantly, there was diversity in how communities related to their mosques and consequently the role that mosques often in, yet not limited to, the person of the Imam- played in post-disaster settings. Imams operated in the role of 'brokers', as they arranged, joined, and coordinated meetings between aid organizations and village communities. However, often, the community was uncomfortable with, or skeptical about, their Imam's involvement in the coordination of relief and rehabilitation. They felt that the role of the Imam should be limited to being a spiritual or personal guide, rather than expanded to include involvement with politicians and financial resources (ibid). This highlights the importance of the local context that needs to be taken into account in disaster risk reduction.

In addition to the many potential functions religion may serve in contributing to recovery, there are also a number of potential obstacles related to religion that may be a challenge for religious communities or disaster responders. Most often mentioned is that of fatalistic attitudes. Religious fatalism refers to the idea that the occurrence of events is predetermined that people cannot or should not control the occurrence of these events nor its outcomes. To this light, religious communities may prefer to wait for evacuation orders of their spiritual leaders rather than directly follow government orders, as has happened during the eruption of Merapi in Indonesia in 2006 (Kulatunga 2010).

A few critical notes are necessary on the assumptions within the existing academic literature on religious fatalistic beliefs in the context of disaster. First, these beliefs may actually form a coping mechanism as discussed by Gaillard and Texier (2010). Second, the before mentioned authors warn that this discourse ''fails to consider the diversity of religious beliefs and their local cultural contexts'' (ibid: 82). Interpretations of disasters are highly heterogeneous and religious beliefs and rational risk evaluation are not mutually exclusive.

In addition, (politicized) perspectives on religion and gender or religion and conflict may hamper collaboration between on faith based disaster aid organizations and religious institutions (Cheema et al. 2014). In yet another way, next to playing an inclusionary role, religion can play a negative role

when people are marginalized on the basis of their religious identity. For example, people may be excluded from aid on the basis of their religion, making them potentially more vulnerable in the context of disasters.

Therefore, understandings of disasters within religious frameworks are not confined to pre-industrial societies and are more widespread than is commonly assumed (Chester, Duncan and Dibben 2008). In fact, religious perspectives are still important for the ways in which people perceive natural disasters.

Spirituality and religion in the aftermath of L'Aquila's earthquake

The collective experience and understanding that religion brings may be an important asset in coping with disasters. In 2009 an earthquake struck EDUCEN case study city L'Aquila. The L'Aquila earthquake caused the death of 309 people, with more than 1000 individuals injured and 66000 displaced. Spiritual and religious dimensions likely helped the survivors to overcome the trauma as well as the psychosocial problems that arose following the earthquake. Spirituality is the personal quest for understanding answers to questions about life, meaning, and relationship with the sacred. Although there is little agreement on how to measure spirituality, individuals appear to have little trouble rating themselves on their own levels of spirituality. Religiousness facilitates spirituality as an organized system of beliefs, practices, rituals and symbols. It has been argued that religious, more than spiritual factors, enabled adaptive features to be effective to enhance resilience in the aftermath of the earthquake (Stratta et al. 2013).

Religion and volcanic risk in Southern Italy (Etna and Vesuvius)

Religious terms of reference have been and remain vital elements in the perceptions held by a significant proportion of the population in Southern Italy when confronted by volcanic eruptions, particularly those that have occurred on the Vesuvius and Etna. Many of Mount Etna's eruptions have been associated by Roman Catholic communities living in the vicinity with religious interpretations and rites. Among the general public living in the vicinity of Mount Etna, there is the belief that disasters may be averted through religious faith and practice through the role of saints. Some people believed the patron saint of the town could have stopped the lava, so some people decided to put the statue of the saint in front of the oncoming lava. They positioned it 50 meters away, hoping it would perform a miracle but it was no good. Yet, in Southern Italy, there is neither negative evidence of fatalism, nor that action by the government has been resisted on purely religious grounds. For example, the evacuations carried out during the 1906 and 1944 eruptions of Vesuvius had the general support of the population affected, and on Etna no central or local government initiatives have been resisted because of religious considerations (for more information see Chester, Duncan and Dibben 2008).

2.4. Religious landscape(s)

Even though religion is usually seen in the developed world as a private feature, an intimate part of people's lives, it plays a central role in the existence of many. Religious congregations have an active function in shaping people's networks, spatial organisation (e.g. neighbourhoods developing around a space of worship) and social activities.

In the USA, 75% of the population is affiliated with a religious tradition. There are 345,000 religious congregations in this country, which accounts for three times more than school or universities. Besides Christianity, with which most people identify with in Europe or in the USA (in an active or

indirect way) as it is the religion that primarily influenced our culture, a large diversity of religions is represented throughout society as depicted in the maps below.

Figure 1. Beliefs and Religion. 'Second largest religious tradition in each state in the USA, 2010'

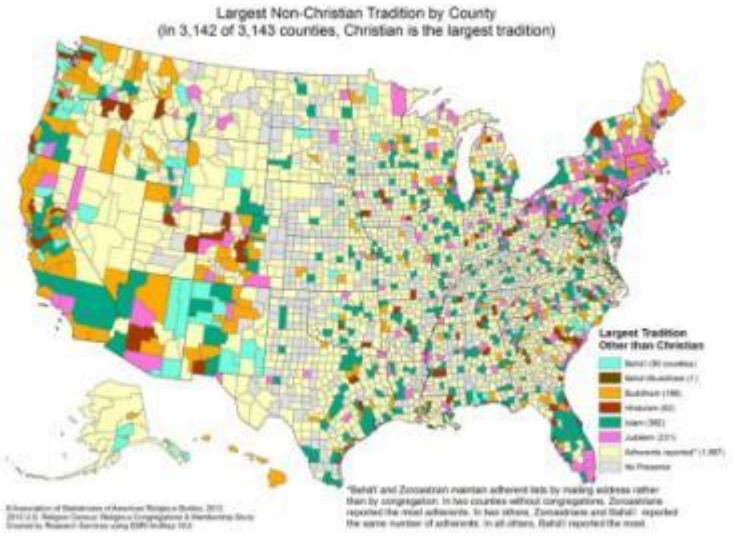

Figure 2. Beliefs and Religion. Largest Non-Christian tradition by County, USA

It may come as a surprise to observe that the second largest community in the American West is Buddhist, or Hindu in the case of Arizona. Aid response, especially food aid, must cater to these communities in a specific way. As the second map shows, each American state is home to a religious medley, telling us that each spatial scale contains its own level of diversity. This translates into different beliefs, practices, cultures, and understandings of risk we need to be aware of when entering the setting. This diversity can indeed be a factor for complexity as it can request specific language or cultural skills that were not anticipated.

Did you know? In Oklahoma, the second country of origin of the immigrant population, after Mexico, is Myanmar.

Religious communities are organised at various levels and potentially have their own understanding of risk. Christianity, as any faith group, is divided between multiple organisations levels that will be mobilised in times of emergency. Schools, hospitals, cemeteries, social services, and aid providers may belong to the same faith and operate within the same networks. Tapping into these networks is necessary to reach populations who might not be on the same map than aid agencies or authorities.

One of the tools used to involve religious and cultural communities is the LEADER process: Learn, Educate, Assess, Determine, Engage, Review. It is used in emergency situations, but is also useful for preparedness:

- Learn about the disaster's impact (hazards maps, Vulnerability and Capacity Assessments, risk maps produced by communities and government agencies…)
- Educate yourself on local faith communities
- Assess your religious literacy and competency : what is your current state of knowledge? With which communities are you the most comfortable working with? Where to source training or information to increase your team's religious literacy and competency? Which biases do you have that might alter your perception of certain religious groups?
- Determine an Engagement plan: who/what/when/where/why/how? This is the point where connecting with brokers, key actors who will positively affect your reach and intervention, is necessary, as well as considering existing capacities.
- Engage religious leaders and communities by building respectful and trustful relationships
- Review and keep improving your plan.

For more information, see the US Federal Emergency Management Agency's (FEMA) training in Religious and Cultural Literacy and Competency.

2.5. Suggestions for further reading

Gaillard, J. C., & Texier, P. (2010). Religions, natural hazards, and disasters: An introduction. Religion, 40(2), 81–84. https://doi.org/10.1016/j.religion.2009.12.001

One of the first publication that put religion on the research agenda of disaster studies by identifying a gap to fill. This special issue of the Religion journal contains field-based work on religious interpretations of and responses to disasters (Christianity, Islam, Buddhism), with a particular focus on South-East Asia. It concludes on the importance of looking at religion as a resource and not as a hindrance in DRR policy.

Ha, K.-M. (2015). The Role of Religious Beliefs and Institutions in Disaster Management: A Case Study. Religions, 6(4), 1314–1329. https://doi.org/10.3390/rel6041314

A case study of how Christianity, Buddhism and Confucianism operate in Korea regarding disaster management. It emphasises on the key role religion can play in mitigation-oriented management (even though religious groups are mostly involved in car-oriented management), because religion can mediate effective disaster management and local culture response. For a successful transition, religious groups should better communicate between each other and religious stakeholders must be aware of the meaningful role of religion to achieve disaster management and mitigate disaster impacts.

Schipper, L. F. (2010). Religion as an integral part of determining and reducing Climate Change and Disaster Risk : An agenda for research. In M. Voss (Ed.), Climate Change: The Social Science Perspective (pp. 377–393). Wiesbaden, Germany: VS-Verlag.

An important reading, where Schipper explores the role that religious belief plays in the context of risk and discusses that religion could contribute both to determining and reducing vulnerability to climate change and disaster risk. It is supported by concrete examples, in El Salvador in particular, where religious beliefs define not only perceptions of hazards, but also determine responses to the hazards, and whether or not preventive or preparedness measures are taken.

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3. The role of memories of disaster

Remembering hazardous events has important value to communities. Memories of previous disasters not only inform people's knowledge of their environment and vulnerability, it also influences their interpretation of risk and their response to future disaster. Memories of disaster may be expressed in public life in different forms, ranging from memorial plaques to myths. Over time, these manifestations of memory of disaster provide communities with the knowledge, practices and techniques to survive in a particular environment, and enable them to make sense of a disaster in recovery phase.

Memories play an important role in determining the way people respond to disaster risk, engage in disaster management practices and accept disaster relief in an emergency situation. It is therefore vital that response agencies become aware of, and accept the different logics and rationalities that people rely on when faced with disaster.

A valuable concept in this regard is 'cultural memory'. Cultural memory ensures that meanings and interpretations of disasters are recorded and handed down from generation to generation. It provides a means by which following generations can understand, contextualize, prepare for, and recover from catastrophes.

But wat is cultural memory? When does memory become 'cultural'?

3.1. What is cultural memory?

When does memory become 'cultural'? To answer this question it is helpful to make a distinction between collective memory, sometimes also referred to as social short-term memory, and cultural memory, also known as social long-term memory. Collective memory is based on oral tradition, shared by the group, often the family, and tends to disappear with the death of the last eyewitness of the event. Cultural memory goes further back and is understood as a social long-term memory based (at least in part) on written and material sources (Pfister et al. 2010). By contrast, cultural memory needs to be underpinned with documents such as newspapers, archives, pictures, and monuments (Pfister 2011). Besides texts, images and rituals, Assmann argues that cultural memory may also exist in the form of narratives, songs, dances, rituals, masks, and symbols. For cultural memory to materialize, communities need to come together on certain occasions, for instance through a joint celebration (Assmann J. 2008: 109-118). Thus, whereas collective memory fades with the death of the last eyewitness, cultural memory lasts for generations.

Cultural memory is not an object of one single discipline, but a transdisciplinary word (Assmann J. 1992; Erll 2008). A broad understanding of cultural memory is "the interaction of present and past in socio-cultural contexts" (Erll 2008: 1-15). A more concrete definition is provided by Assmann who understands cultural memory as "the characteristic store of repeatedly used texts, images and rituals in the cultivation of which each society and epoch stabilizes and imports its self-image; a collectively shared knowledge of preferably (yet not exclusively) the past, on which a group bases its awareness of unity and character".

Cultural memory is not about how the past is scientifically investigated, but refers to how we remember the past, and how we (re-)interpret certain events. This explains why it is called memory and not knowledge about the past (Assmann J 2008). Moreover, processes of remembering are selective, and subject to emotions, moralities, politics and historical -many times unequal- social relations (Ullberg 2014: 3).

In brief, cultural memory of disaster encompasses how "catastrophic events" are absorbed into history (Alexander 2000). It reveals how communities adapt their cultural reservoirs over time in light of disastrous events.

Cultural memory may be expressed in many different forms. It is manifested in practices and structures as diverse as storytelling, small talk, myths, official discourses, monuments, rituals, landmarks, and arts. A distinction can be made between tangible and intangible cultural memory.

Tangible cultural memory refers to the 'touchable' or visible forms of cultural memory. Memory of past disaster can for example be materialized through mnemonic tools such as museums, archives and memorials (Ullberg 2014). This tangible form of cultural memory of disaster can also be found in Dordrecht, a city in the southwest of the Netherlands that experienced flooding disasters in 1421 and 1953. A clear example of tangible cultural memory of the 1421 flood can be found in the form of a monument in the city center of Dordrecht. The monument is an inscription on the wall which states in Dutch:

''t land en water dat men hier ziet, Waren 72 parochien , na s' kronyks bediet; Geinundeert door 't water krachtig, In 't jaar 1421 waarachtig''

The text refers to the supposedly 72 villages that have been ruined by the water.

Cultural memory of the 1953 flood is also present apparent in the city. At several locations high water marks can be found on walls of public and private buildings, which show how high the water got in 1953. Such marks serve as a way to remember and compare the frequency and severity of floods over time. Another noticeable form of tangible cultural memory are the 40 photos on street corners throughout the city that portray the same street just after the flooding of 1953.

For more information on the case study of Dordrecht, see Dordrecht Case Study Manual

3.1.1. Tangible cultural memory of disaster

A variety of forms of tangible cultural memory can be distinguished. First, museum collections are an eminent way of remembering past disaster, serving as important commemorative devices. Worldwide, many museums can be found with sections of their collections dedicated to a specific disaster. In the Netherlands, the North Sea flood museum, located in Ouwerkerk in the province of Zeeland, informs the public on the 1953 North Sea flood and Zeeland's battle against the tide. The museum not only displays what happened but also focuses on personal experiences and emotions. Moreover, the museum ''het Hof van Nederland'' located in Dordrecht, is an important carrier of cultural memory of both the 1421 and the 1953 flood in the Netherlands. A specific room of the museum is for example dedicated to ''living with water'' and cultural memory of the flooding of 1421 can be found in the form of a multimedia reconstruction of the flood, exhibiting amongst others newspaper articles and photos on the event.

Besides serving as reminders of past disaster, museums can have an important educational function and may contribute to enhancing visitors' knowledge on preparedness and response.

The **Museum of the City of Volos** (Greece) enhances cultural memory of historical events in the city's history, including the earthquake disasters of the 1950s. However, it is not within the museum's purposes to advance disaster risk awareness. EDUCEN makes an effort to bridge the gap between knowledge about the history and culture of the city, past disasters included, and triggering awareness and action towards disaster risk awareness and protection. Therefore, the project acted as mediator between the Museum of the City of Volos and the Earthquake Planning and Protection Organisation of Greece (EPPO). Moreover, EDUCEN pushed for the development of tools to advance visitors' disaster awareness and to inspire taking measures towards disaster protection at an individual, family and school level. EDUCEN, in agreement with the Museum and EPPO, opted for the development of tools specifically directed at teenagers who were considered as one of the most challenging group of visitors.

For more information on the case study of Volos

Another well-known form of tangible cultural memory are memorials. Memorials in the public sphere are well suited to recall the memory of historical disastrous events. They serve as a place to call to mind what happened. Frequently, they also are a location where people gather in annual commemorative events. The photos below are public monuments established in memory of the devastating 1953 flood of the southwest of the Netherlands.

Figure 3. Remembering 1953 (Esser 1957)

Figure 4. Remembering 1953 (Bremers & Bremers 1993)

Memorials can take a variety of forms. The Katrina National Memorial Park for example commemorates the damage done to by hurricane Katrina to the city of New Orleans in 2005. The curving lines in the design of the park suggest the traditional spiral shape of a hurricane

Figure 5. Design of the Katrina National Memorial Park. Photofrom

http://www.bestofneworleans.com

Marks on public buildings are also frequently seen manifestation of tangible cultural memory on disaster. High water marks carved on the walls of public or private buildings for example present a typical form of cultural memory. They serve as a way to remember and compare the frequency and severity of floods over time. High water marks are for example visible in the wall of the “Gartenhaus” situated on the bank of the Tauber River in Southern Germany (Pfister 2010: 9). A total of 24 marks are visible on the wall, serving as a point of comparison for each subsequent flood.

Figure 6. High water marks on a wall in Southern Germany Photo made by Rudiger Glaser (Egner et al. 2014)

Another form of cultural memory on disaster can be found in commemorative plaques which often serve as remembrance of what happened and the lives that were lost. These commemorative plaques sometimes also contain poems. Poems present another form in which cultural memory on disasters comes to the fore. An example of an expression of cultural memory in the form of poetry can be found below. It is documented for the flood of the Drac River in Grenoble in France, 1733. The poem was published two months after the event.

The ground vanishes, the mountains descend;

Observably, brooks and rivers rise;

Grenoble and its surroundings are below a real sea;

Everything trembles, the cattle, the birds, and humans;

Grenoble, you are lost. The monster swallows you.

(Pfister 2010: 8)

Moreover, tangible cultural memory can be manifested in books, paintings, and photos, news clips and movies. As present-day disasters are more easily recorded through modern communication tools and social media, they are less prone to change over time (Erll 2008). Media technologies and the circulation of media products nowadays play an important role in the transmission of cultural memory of disaster. Moreover, mass media construct narratives about disastrous events, thereby influencing how a disaster is remembered.

Last, a less regularly seen form of tangible cultural memory can be found in the preservation of unrestored buildings. In Japan, in Hiroshima, the Genbaku Dome for example became a symbol of the destruction caused by the atom bomb on 6 August 1945. It was the only structure left standing and has been preserved in the same state as immediately after the bombing (UNESCO website), acting as strong reminder of the destruction caused by the disaster.

Intangible cultural memory refers to the less visible manifestations of cultural memory such as stories, myths, rituals and ceremonies, festive events and performing arts such as music and theatre. Telling stories is a well-known example of intangible cultural memory of disaster. There are many stories and myths that attempt to explain or come to terms with natural disasters. An example of how a narrative keeps the memories of the 1421 flood and its consequences alive can be found in the EDUCEN case study city of Dordrecht, the Netherlands.

In several Dutch museums, such as the Rijksmuseum in Amsterdam and the Hof van Nederland museum in Dordrecht, a story is told on a child named Beatrix de Rijke (Beatrix de lucky one) who survived the flood of 1421 in the Netherlands. The story goes that her crib miraculously floated on the water because a cat kept the crib in balance. When the crib washed ashore in Dordrecht, the municipality decided to take care of the costs of the orphan girl. The story of Beatrix was first published by the city historian Matthijs Balen in his 1677 Description of the City of Dordrecht. However, an image of the crib with the cat can already be found as one of the details on a panorama of the flood by the Master of the St Elisabeth Panels, displayed at the Rijksmuseum in Amsterdam.

Figure 7. The story of Beatrix de Rijke

3.1.2. Intangible cultural memory of disaster

After a disaster, communities feel the need to make sense of what happened and search for answers- supernatural, religious, or scientific- to explain the event, Cashman and Cronin (2008) note. In an attempt to come to terms with a disastrous event, existing cosmological, ancestral, or scientific frameworks may be adapted and transformed into stories that offer myth-like explanations. The narratives often contain a merger of metaphors, heroic exploits, rumors and scientific explanations and commonly emphasize the event as the responsibility of a higher power, often a god, monster, giant, or ancestor (Cashman and Cronin 2008).

Examples from Iceland and Japan illustrate how such narratives continue to play a role in modern communities.

In Iceland, the consequences of an volcanic eruption are kept alive through narratives, especially in rural communities, where heroic stories about narrow escapes and bravery during an eruption have been passed on to the younger generation (Johannesdottir and Gisladottir 2010: 414). Research by Johannesdottir and Gisladottir on people's perceptions of Katla, a sub-glacial volcano in southern Iceland, found that several legends and myths exist. The respondents in their research repeatedly mentioned two legends, the legend of Krukkur and the legend of Katla. The legend of Krukkur is about prophet from the middle ages, Krukkur, who had predicted that if the outburst flood of Katla had reached a certain place, the eruption of Katla would cease and change its starting place and erupt at sea. In 1918, the flood reached the specific place and in 1963 and 1973 two huge eruptions occurred at sea not far from Katla. Some residents then indicated that the predictions of Krukkur had proven valid and that Katla would not erupt again. In the legend of Katla, respondents refer to Katla as a female. This has its roots in a legend from the Middle Ages about a female who threw herself into a crater after a conflict with residents in the community. Soon after, there was an eruption which was seen as revenge of Katla. An eruption of Katla is seen as ''the return of Katla''. In the affected communities, ''strong oral traditions and storytelling serves as a constant reminder of the hazardous environment they live in'', Johannesdottir and Gisladottir (2010: 418) argue.

Another example of intangible cultural memory in this form can be found in the Japanese stories on earthquakes. According to a popular myth, the tremors of the earth are caused by restless catfish (or namazu in Japanese) underneath the earth's surface (Bestor 2013). Namazu is one of the yo-kai or ''monster'' creatures of Japanese mythology that have been seen as causing misfortune or disasters. Namazu are also found in printed form, on posters or pamphlets. The first known Namazu prints date from shortly after the Edo (modern Tokyo) earthquake of 1855. Nowadays, namazu prints can also be found on earthquake safety posters (Reitherman 2013).

Besides stories, folksongs commemorating disasters have a long tradition. The songs often share certain elements like recounting of the details of the event and the suffering of victims and survivors, and serve a common function in helping to heal society (Carr 2004). Songs also illustrate the psychological impact of disastrous events, often illustrating the relationship between the hazard and the community (Cashman and Cronin 2008).

Another example of intangible cultural memory are rituals and events like public commemorative silence. These (often national) commemorative events have become an important part of the history and identity of past and present communities throughout the world (Eyre 2007). ''Event specific public activities such as memorials provide a communal forum for the outpouring of intense emotions, public recognition of the collective loss, and the reassurance that the group, while damaged, continues (Hawdon and Ryan 2011: 1368). Such rituals and events are often performed on disaster anniversaries and may for example include the laying of wreaths, lighting candles, or reading the names of the diseased.

The following table(table 1) provides a non-exhaustive list of different forms of tangible and intangible cultural memory of disaster.

Tangible forms of cultural memory	Non-tangible forms of cultural memory
Paintings	Stories/ oral traditions/ myths
Newspaper articles	Performing arts such as songs, dance, puppet shows, theatre
Photos	Traditions and rituals
Monuments and memorials	Social practices
Landmarks	Festive events
Libraries/ books	Commemorative events
Museums or exhibitions	
Archives	

3.2. Why is cultural memory important?

Memories of disaster can function as an asset for communities in hazard-prone areas but also for disaster risk managers.

For communities, three main purposes of cultural memory can be distinguished from the literature:

1. Cultural memory of disaster serves as a knowledge repository which provides communities with crucial information on the hazard and hazard mitigation.
2. Cultural memory of disaster provides communities with response plans and may inspire the invention of strategies and practices in dealing with recurrent hazards, for example adaptations in housing and architecture
3. Cultural memory of disaster provides people with an explanation, -supernatural, religious, or scientific, enabling people to mitigate trauma and stimulating acceptance of the event

3.2.1. Why is cultural memory important for communities?

Cultural memory, tangible and intangible, on disasters serves several purposes for communities.

First, it functions as a knowledge repository of historical experiences. Cultural memory in the form of a monument or oral traditions can provide communities with crucial information on, for example, precursory signs of the hazard, descriptions of the event –including specific vulnerable locations, directions, timing and duration, impact on the local population, and pre- and post-hazard changes in the landscape. It may furthermore provide information on community hazard mitigation, such as past areas of danger, safe areas, and evacuation routes. The research of Johannesdottir and Gisladottir (2008) on the village of Alftaver, Iceland, for example revealed that most residents had first-hand knowledge on the outburst of volcano and the risk of a tsunami from former residents in the area. They acquired their knowledge from their ancestors who experienced outbursts in 1860, 1823 and 1918 (Johannesdottir and Gisladottir 2008).

Specific knowledge on the presence of hazards has proven extremely valuable in the case of the 2004 earthquake and tsunami in the Indian Ocean where different ethnic groups of Aceh, Indonesia were hit unfairly: whereas about 170,000 Acehnese and Minangkabau people died, in the same region, only 44 Simeulue people passed away. The research shows that the Simeulue detected the tsunami very early due to their knowledge of the environment which enabled them to escape to the mountains. Research found that their knowledge on tsunamis is rooted in oral accounts of an event that occurred in 1907 killing between 400 and 1800 people. About 85% of the surveyed population said they were aware of this event, which they learned from their parents and grandparents. Its precursory signs such as sea withdrawal had been remembered and passed down from generation to

generation. After the earthquake people went to check if the sea was withdrawing, spurring immediate evacuation. In this case, oral traditions on tsunamis documented the experience of past generations and provided a means through which following generations understood what was happening (Gaillard et al. 2008).

Second, cultural memory of disaster provides communities with interpretations and response plans (Schenk in Kruger et al). This has important implications for the ways people explain an event and react to it. When remembered, memorialized and compared, experiences of disasters may for example inspire the invention of social practices and techniques in dealing with recurrent hazards. As stated by Engel et al (2014), ''communities living in hazard-ridden or disaster-prone areas develop an array of coping mechanisms as well as more deeply embedded practices to deal with threats and opportunities their environments encompass (…)''. ''Experiencing recurrent disaster pushes communities to develop cultural strategies and practices to deal with these adverse events and ensure increasing levels of resilience''. Historical records and architecture have provided evidence of cultural adaptations to environmental threats (See also Bankoff 2011).

Although Dordrecht was among the areas that narrowly escaped the destroying impact of the flood, several forms of cultural memory on the flood can be found in the city. Adaptation to physical hazards posed by the water has led to a range of coping mechanisms, including engineering solutions such as the well-known Delta Works. Moreover, the risk of flooding is seen in the adaptation of houses in risk-prone areas and the use of flood boards in the main street of the city. Examples of architectural adaptation can also be found in the parishes of Itteren and Borgharen in the south of the Netherlands. In Itteren, the majority of houses have built their first floors as high as, or higher than, the highest flood levels reached before the house was built (Velotti et al. 2011). This enables them to stay in their houses when the parish is flooded and keeps most of their private goods safe from the water (Engel et al. 2014). Memory thus has an instrumental value to communities as it spurs the development of problem-solving tools, serving as a community education tool, that over time proves to be valuable to surviving in a particular environment (see Schein 1999: 43, Engel et al. 2014).

Third, cultural memory on disasters provides people with an explanation. Psychological studies on the aftermath on disastrous events have shown that trauma can shake the foundations of a person's faith and generate a search for answers- may they be supernatural, religious, or scientific. An important component of community resilience to hazards is accepting the event. Such acceptance may be realized through the adaptation of existing cosmological, ancestral, or scientific frameworks, but may also be done through creative and artistic expressions or myth-like explanations. Simple explanations, whether or not in the form of myths or superstitions, enable communities to make sense of the experience (Taylor 1999). When such explanations are not available, psychological recovery from a disastrous event may be hindered. Besides the positive aspects of cultural memory it is important to note that the search for explanations can also misinform behavior of communities or hinder mitigation measures of outsiders. Oral traditions, myths or other explanations for an event that are transmitted effectively may for example replace ''rational calculation'' in a community's response to disastrous events (Paine 2002). Moreover, people may also use cultural and historical explanations to minimize fears and to live a normal life, increasing their vulnerability. Such explanations may very well differ from scientific explanations and if not well understood, hinder adequate disaster response of disaster risk managers as we will see below.

For disaster managers, The influence of cultural memory on people's knowledge, behavior, and ability to find explanations and make sense of past disaster has important consequences for disaster risk management practice. Communities might not respond the way disaster managers expect them to behave. Risk perceptions may be lower than disaster managers would expect due to previous experiences with disaster that did not cause much personal damage or risk. Such experiences may lead people to believe that they are safe in the case of recurrent hazards.

In the case of the Mulde river in Germany, no one seemed to have anticipated that the river could rise as high as it did in 2002. Most of the affected people had previous experience with floods but because they thought they understood the river and its variations, they could not envisage the 2002 flood (Kuhlicke et al. 2011). Memories and previous experience with hazards in the above cases led to inaccurate perceptions of risk. Such flawed perceptions could result in a lack of preparation and mitigation measures, and damage and victims that could have been prevented.

Cultural memory of disaster may also influence how people respond to disaster risk, if and how they engage in disaster management practices, and whether they will be acceptant of disaster relief.

Knowledge of the existence of cultural memory of disaster in an area may therefore provide disaster managers with more insight into community perceptions and behavior, and improve communication and interaction between disaster managers and local communities.

3.2.2.Why is cultural memory important for disaster managers?

The influence of cultural memory on people's knowledge, behavior, and ability to find explanations and make sense of past disaster has important consequences for disaster risk management practice. For disaster managers this entails that communities sometimes might not respond the way them expect them to behave. As stated by Dash and Gladwin (2007: 70) ''Although emergency managers and others assume that people will act rationally- hear a warning, realize the danger conveyed in that warning, and leave when told to do so (because the cost of staying outweighs the benefit)- more often than not, many of those at greatest risk choose not to take protective measures each time a warning is given''. People's protective response to warnings is a consequence of the perceptions they have. Most of the time, people evacuate and take shelter only when they find themselves being in imminent danger and if they perceive that taking action is appropriate considering the threat (Mileti and Peek 2000).

Risk perceptions often rely on intuitive risk judgements and beliefs rather than on rational deliberations, and therefore may considerably differ from risk assessments by experts. As Alexander argues ''decisions about whether to mitigate a natural hazard are often not a function of how dangerous the hazard is in absolute or objective terms but how dangerous it is perceived to be'' (2000: 73). A frequently noted factor as shaping risk perception of natural hazards is previous experience with, and memories of previous hazards. Cultural memory of disaster may thus influence risk perception. Hurricane Katrina revealed that in several cases risk perception of people and judgement of their own vulnerability was low based on previous experiences with hurricanes. Memories of past hurricanes led people to believe that they rarely cause damage, dangerous flooding, or personal risk (Eisenman et al. 2007).

Cultural memory plays an important role in determining the way people respond to disaster risk, engage in disaster management practices and accept disaster relief in an emergency situation. Warning information and activities of disaster risk managers are processed through the social and cultural lenses of communities which are constructed by their particular cultural context, and amongst others, by their own experience, knowledge, and explanations of disaster. It is therefore vital that response agencies become aware of, and accept the different logics and rationalities that people rely on in the face of risk. The presence of monuments, museums, high-water marks, and stories and myths incorporated in collective long-term memory of communities may present important clues for community perceptions and behavior to disaster risk managers. Having disaster risk management informed by cultural memory and its potential impact may help to reduce misunderstandings and inefficiencies and improve communication and interaction between disaster managers and local communities.

3.3. Using cultural memory of disaster in disaster risk reduction

When disasters do not occur frequently, memories from a disaster fade away, often resulting in low risk awareness. It is therefore important to build a system that preserves disaster awareness and enables the transfer of lessons to the next generation. Already available manifestations of cultural memory can be used as a resource for disaster risk managers to improve disaster risk awareness among populations in hazard prone areas. The EDUCEN project identified several ways to identify and use of memories of previous disaster as an asset in disaster risk reduction and management.

- Use museums and collections to encourage cultural memory awareness
- Organize a walking tour
- Play a serious game on cultural memory

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4. Cultural heritage and disaster in today's cities

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4.1. Cultural heritage and disaster

The last decades have seen a series of disastrous that were costly events in terms of cultural heritage. Fires, earthquakes, flooding, tsunamis, land and mud slides, wind, and storms are among the major causes of loss and damage of cultural heritage. These disasters often result in the loss of irreplaceable assets (Taboroff in Kreimer et al. 2003).

Cultural heritage is seen as a major component of quality of life and plays an important role in society and community wellbeing (Tweed and Sutherland 2007). The loss or deterioration of heritage can seriously affect local and national communities for several reasons:

4.1.1. Cultural heritage has important symbolic and material importance for community identity

Direct contact with cultural heritage enables history to come to life, and contact with culture inspires, humanizes, and enriches people, Alexander (n.d.) noted. Cultural items, he continues, contribute to the 'spirit of place'. When a disaster occurs, the destruction of this 'spirit of place' can weaken a person's sense of identification with a place and deteriorate the determination to rebuild. On the contrary, a strong 'spirit of place' can inspire disaster survivors to overcome the obstructions they face due to the disaster and reconstruct not just their functional environments but also those that represent their heritage (Alexander n.d.). The psychological impact on communities due to the loss of cultural heritage to which they are closely associated should not be underestimated. Local communities and individuals feel a socio-psychological need to see and feel that the familiar environments with which they identify are not totally wiped out (Wijeratne in ICOMOS 2008).

Milko Morichetti, an Italian art restorer, expresses this sense of identification as follows:

"Without the culture that connects us to our territory, we lose our identity." "There may not be many famous artists or famous monuments here, but before anything, Italians feel proud of the culture that comes from their own towns, their own regions. And when we restore a church or a museum, it gives us hope. This is not just about preserving museum culture. For us, it's about a return to normalcy." (Medina 2009)

Moreover, during the post-disaster and post-conflict phase, heritage landmarks and the continuation of traditional cultural practices may contribute to the recovery of a community and help vulnerable people recover a sense of dignity and empowerment (UNESCO website).

4.1.2. Cultural heritage has socio-economic value for cities

The historic built environment not only provides a city with character and a sense of identification for local communities, it can also boost the local economy and create jobs. Cultural heritage is repeatedly identified in both academic literature and policy documents and by regional and national governments as an economic source that can provide employment and realize profit and local development (Loulanski 2006). Heritage and its preservation have long been regarded as oppositional to economic development (it is either historic preservation or economic growth) but they are increasingly seen as effective partners in development, as Loulanski (2006: 56) argues. By investing in cultural attractions and infrastructure, cities seek to secure a niche position on the international tourism map. Tourism also represents an important source of financial resources for the preservation and restoration of the heritage (Russo and van der Borg 2002). It is for instance noted that in Europe, heritage is vital to the competitiveness of tourism, which is valued at 586 billion euros per annum and employs 9.7 million people (Jigyasu et al. 2013).

Moreover, cultural heritage attracts investments and promotes locally based jobs related to a wide range of activities such as tourism, conservation, construction, arts, and the production of crafts. It is therefore also a powerful asset for inclusive economic development (Jigyasu et al. 2013).

Disasters therefore not only cause material damage to heritage sites but they may also severely affect the livelihoods linked to cultural heritage and the incomes generated through tourism.

4.1.3. Cultural heritage may serve as a source of resilience to communities

Heritage can play an important role in reducing a disaster's impact on people's lives, properties and livelihoods (World Disasters Report (WDR) 2014).

Cultural heritage in both its tangible and intangible forms may serve as a factor contributing to the survival of communities from disasters, both psychologically and materially. Traditional knowledge systems embedded in cultural heritage can play a substantial role in disaster risk reduction (Jigyasu et al. 2013). Disaster risk may for example be reduced through traditional knowledge associated with environmental management and building techniques (WDR 2014). Cities, their identity and building techniques are for a great deal influenced by their environment and the threat of hazards. People adapt the built environment to adjust to living with risks in places where they are frequently exposed to hazards. These patterns become embedded in cultures over time (Moore 1964 in WDR 2014: 124).

This accommodation is reflected in the design of buildings and the materials and construction techniques. Important to note however is that these architectures are the result of a whole range of socio-cultural factors, not just the threat of hazards. Heavy earthquakes in Southern Europe have for instance spurred major changes in architectural design and practice on several occasions (Buforn et al. 2004 in Bankoff 2015). In Dordrecht, the Netherlands, so called flood board are positioned in flood prone streets to prevent the water from entering shops and houses.

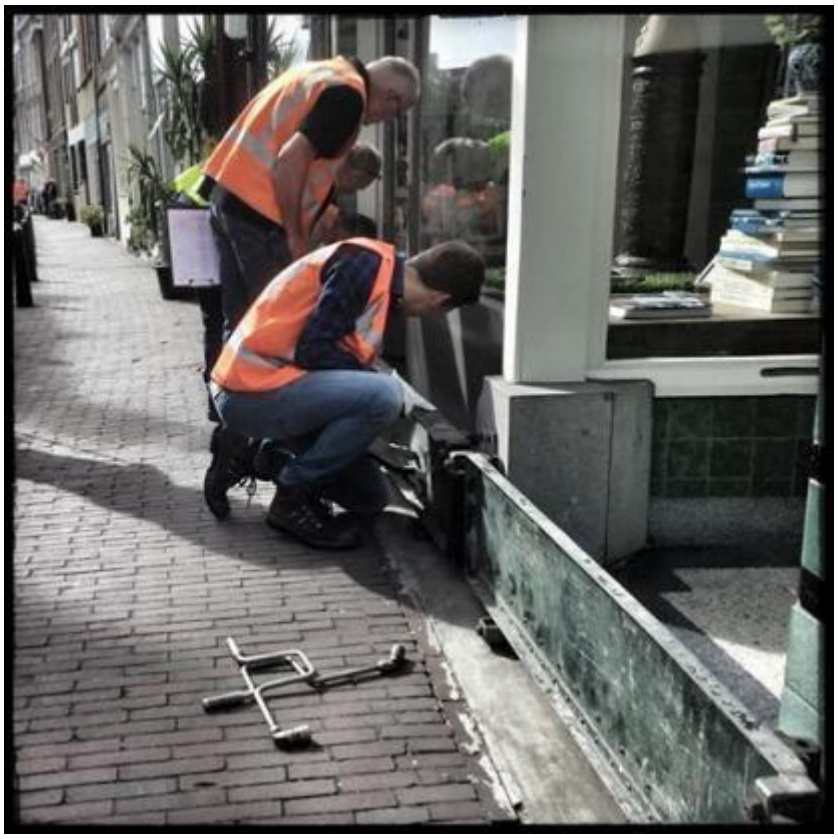

Figure 8. Testing of flood boards in Dordrecht, the Netherlands. Photo from municipality of Dordrecht, http://www.imgrum.org/media/1349282005506212558_2085816493

Moreover, traditional knowledge developed over time, enables communities in risk prone areas to recognize changes in the atmosphere, or the behaviour of flora and fauna, and prepare themselves (Jigyasu et al. 2013). ''Protecting heritage from disasters is, therefore, not a luxury, but a fundamental consideration to be given priority together with other humanitarian concerns (…)'' (WDR 2014: 123).

From the above, the following points are distinguished that may harness the strength of culture as a tool to reduce disaster risk (see also Jigyasu et al. 2013).

- Draw on traditional knowledge and blend scientific knowledge and technological advances with capacities and resources already available at local level
- Draw on traditional building techniques and locally available material as to inform modern day practice

4.2. Defining cultural heritage

Cultural heritage is commonly defined along the lines of 'the archaeological and historical built environment and moveable heritage' (Taboroff in Kreimer et al. 2003). This heritage serves a role in preserving local identity and personality, but also local knowledge; preserving heritage has educational purposes in awareness raising, as the layout of a city (plazas, avenues), the construction of buildings (for example earthquake resistant) and infrastructure (multiple escape routes) may reveal a logic that is often more in tune with urban exposure to natural hazards than today's urban development. This is even more the case for ancient civilisations. While modern urban citizens are unlikely to be persuaded to live in round Mayan houses for reasons of disaster proofing, preserving this knowledge and its context reminds us of tested design principles that are easily forgotten. Material culture is composed of the tangible objects, movable or immovable, that people create or

share, from storm-surge barriers and dikes, to disaster-proof houses that protect people from environmental hazards. Preserving and restoring ancient homes, roads and infrastructure can also have a very concrete use in Disaster Risk Reduction, preventing expensive unreflective planning for the future 'from scratch'.

According to UNESCO, material, or tangible, cultural heritage encompasses several main categories:

- Movable cultural heritage (paintings, sculptures, coins, manuscripts)
- Immovable cultural heritage (monuments, archeological sites etc.)
- Underwater cultural heritage (shipwrecks, ruins and cities)
- Natural cultural heritage (natural sites with cultural aspects such as physical, biological, or geological formations, specific flora, fauna and eco systems)

There is also natural cultural heritage, natural sites with cultural aspects such as cultural landscapes, physical, biological or geological formations (http://www.unesco.org).

However, culture is not only material, it also has a nonmaterial component, and so can its heritage. It is important to realise that material cultural heritage cannot really be dissociated from cultural practices that are often transmitted from one generation to another (nonmaterial culture). Nonmaterial culture, as elaborated in Section I of this handbook, comprises beliefs, values, language, perceptions, memories, and rules of behaviour. It makes good sense to include the time-honed cultural practices in this definition, and arrive at cultural heritage as the 'products and processes of a culture that are preserved and passed on through the generations'.

A similar definition is used by UNESCO: ''the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations'' (http://www.unesco.org).

4.3. Protecting and preserving cultural heritage

Cultural heritage is often concentrated in urban areas where trading and business activities have spurred the production of different displays of religious, civic, and private creativity. Such cities are often located in disaster prone areas, for example in coastal areas or alongside rivers or close to fault lines, and therefore vulnerable to natural disaster (Taboroff in Kreimer et al. 2003).

When disaster strikes, the loss of cultural heritage causes a wide range of destructions. EDUCEN's cities are also at risk, or, sadly, already suffered from major damage to cultural heritage. Well known examples are the Italian city of L'Aquila where the earthquake of April 6, 2009 caused the destruction of many of the city's historical and monumental heritage. Amongst others, several churches, the city's oldest gate built in 1548, and the National Museum of Abruzzo, housed in a 16th century castle, have collapsed and/or are too unstable to enter. Another EDUCEN case study, the Italian region of Umbria, a landlocked region in the center of Italy, has been hit hard by a series of earthquakes in August and October 2016. Damage to cultural heritage has been severe. In Norcia, one of the affected towns, the Basilica of St Benedict dating back to the XIV century, survived the August shock but the force of the October earthquake proved too powerful, and caused the church to collapse.

Figure 9. The Basilica of St Benedict in the town of Norcia after the earthquake

In one of EDUCEN's other case studies, the city of Istanbul, the likelihood of a devastating earthquake is estimated at 62% within the next 30 years. Istanbul is not only the financial, commercial and industrial center of Turkey, producing 56.6% of the nation's export, but is also the cultural cross-roads of eastern and western heritage. The city has the highest number of museums of the country and hosts some of the most important monuments of the Roman, Byzantine and Ottoman Empires (Johnnides 2010).

Despite the serious nature and consequences of the destruction or damage of cultural heritage, the number of heritage properties that have developed a proper disaster risk reduction plan is surprisingly low (UNESCO 2010). Nevertheless, the last decades have seen several initiatives at international and regional levels in the field of cultural heritage and disaster risk reduction. These initiatives aim on the one hand to introduce disaster risk reduction into heritage protection and management, and on the other to intensify and mainstream heritage concerns in larger disaster risk reduction initiatives (JIGYASU ET AL. 2013).

4.3.1. International and regional initiatives in the field of cultural heritage and DRR

At the international level, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has established a number of conventions for the safeguarding of cultural heritage, including from the effects of disaster. The 1972 Convention Concerning the Protection of the World Natural and Cultural Heritage (World Heritage Convention), with nearly 1000 sites recognized and 190 States Parties, has become the most popular treaty aimed at the preservation of cultural heritage from all sorts of dangers. In 2003 a new convention was adopted, focusing on intangible cultural heritage, including traditional knowledge, practices and skills which have been used by communities to reduce risk from disasters (JIGYASU ET AL. 2013).

Developments regarding the protection of cultural heritage have occurred also at the regional level. The European Commission for example included protection of cultural heritage in its ''Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risk. The goal of the Directive is to reduce and manage the risks posed to, amongst others, cultural heritage (JIGYASU ET AL. 2013).

Moreover, the Council of Europe has promoted the reduction of the vulnerability of ancient buildings and historical settings from natural disaster. This has been done through its European and

Mediterranean Major Hazards Agreement (EUR-OPA) which aims to ''reinforce and promote co-operation between Member States in a multi-disciplinary context to ensure better prevention, protection against risks and better preparation in the event of major natural or technological disaster'' (Council of Europe website).

A major challenge for the protection and preservation of cultural heritage is the fact that it is managed through a very diverse set of ownership or management arrangements, including among others private foundations and national and local governments. To reduce the risk to cultural heritage, heritage managers have to collaborate with disaster management authorities, universities, NGOs, political leaders at national and local level, the private sector, and the public.

The commitment of local governments, in particular mayors, is also vital to the protection of cultural heritage and disaster risk reduction. In 2012, mayors from cities throughout Europe adopted the 'Venice Declaration on building resilience at the local level towards protected cultural heritage and climate change adaptation strategies'. Fostering partnerships between these different actors and that protect and draw on cultural heritage- on international, regional, and local level- for disaster risk reduction is therefore vital.

An overview of key international conferences, workshops, training courses and publications on disaster risk reduction of cultural heritage can be found in the JIGYASU ET AL. report 'Heritage and Resilience. Issues and Opportunities for Reducing Disaster Risks' (2013: 50).

4.4. Dilemmas in reconstructing cultural heritage after disaster

As explained above, disasters often severely damage the built environment and in it immovable tangible cultural heritage. Individual buildings, groups of buildings, whole neighbourhoods and settlements of historic or vernacular (traditional) character, under preservation status or not, are damaged at various degrees or even collapse. It then becomes a major issue to decide what to keep from what existed before the disaster and at what price in terms of resources, money and time.

Difficult trade-offs present themselves in a time when pressures to the response mechanism are severe and often overwhelming. Should all buildings deemed to be dangerous be demolished as soon as possible and what procedures should be followed? Should owners of dangerous historic buildings be allowed to proceed with engineering interventions for removing dangerous elements or even for the demolition of the dangerous building? In case of listed historic buildings that are deemed damaged beyond repair, should protection of heritage be considered prevail over protection of lives? Apart from historic buildings and monuments, what should be done with damaged (in some cases damaged beyond repair) traditional buildings and neighbourhoods that are not listed as monuments to be preserved? How long should recovery be delayed in order to protect tangible cultural heritage either already listed or not? Who and how should deal with such trade-offs and make decisions?

Especially in earthquake disasters, damaged buildings can be dangerous for people, particularly during aftershocks. Even more, people feel threaten by buildings; old buildings are often seen as dangerous without exception. In these conditions, preservation of existing buildings and neighbourhoods appears to be a luxury at best and an unnecessary present threat and future risk at worst. In the midst of emergencies and urgent needs, it takes a long term outlook to see the significance of heritage for future quality of life and sustainable development.

Every disaster is unique in its socioeconomic, historic and geographical context. There is no one-size-fits-all prescription towards the protection of cultural heritage in a disaster. There are some commonalities in observed positive cases, though. In societies and areas with disaster experience, the knowledge that the disaster is not the end but a phase, assists in maintaining a long term view. In such cases, the city and the society realise more that there will have a future and the foundations of this future lay in post-disaster decisions. If there is no local disaster experience, consultancy and know-how by trusted knowledgeable external agencies can be very helpful (see the example of Konitsa, Greece). What counts more, though, is the attitude of the devastated society towards

culture and cultural heritage, history and continuity. Perception of cultural heritage and its value is different in different societies, so is the meaning of preservation of cultural heritage (Heritage Council of Victoria, 2014. HLF, 2015).

Saving historic and vernacular buildings after the Konitsa, N. Greece, earthquake disaster

Konitsa is a remote town in Northern Greece. In the '90s, it was a town of about 5.000 people mainly living on agriculture and services. Parts of the town and many buildings were of a vernacular form. There were also numerous listed monuments and historic buildings.

In 1996, Konitsa suffered an earthquake disaster. A first destructive earthquake caused severe damage to the building stock and great fear to the people. Yet, it was the main shock a week later that caused devastation and panic. The population did not have previous earthquake experience.

After the devastation, the population and the Municipality put pressure for the demolition of all old damaged buildings. Even buildings under preservation were at risk from demolition in haste. A trusted central government agency responsible for earthquake protection intervened and acted as consultant to the Municipality, advocating for the protection of vernacular and historic buildings and for preservation of the image of the place. Furthermore, the previous good practice of the city of Kalamata, in Southern Greece, in preserving cultural heritage after the earthquake disaster of 1986, about ten years earlier, was communicated to the Mayor of Konitsa via informal networking among Mayors. In the heart of the emergency, the attitude of the Municipality shifted towards preserving the identity and the vernacular character of the city and with it the stance of the population.

As a result, Konitsa preserved its vernacular and historic identity which together with its rich natural resources became tourism assets.

(Dandoulaki 2010)

Figure 10. Damaged building in Konitsa

Source: EPPO, http://www.oasp.gr/node/410

Figure 11.Damaged building in Konitsa

Source: EPPO, http://www.oasp.gr/node/410

Figure 12.Upper Konitsa today

Source: Konitsa Municipality - G.Dachris, http://www.konitsa.gr/visit/gallery

Figure 13.Konitsa today

Source: Konitsa Municipality, http://www.konitsa.gr/visit/villages/43-konitsa

Activities for saving historic and vernacular buildings, groups of buildings, neighbourhoods and settlements cannot be postponed for long, beyond the emergency phase or some elements to be preserved will be ruined or even demolished in the chaos and panic of post-disaster situation. During the emergency phase (typically the first 72 hours after the disaster) cultural heritage is under a range of new risks such as (UNESCO 2010, p. 41):

- Theft of fragments or movable objects of the property.
- In case of flooding, contamination through pollution and mould growth.
- Risks arising from the surrounding environment or habitat.
- Insensitive actions by relief agencies or by volunteers due to lack of awareness; for example pulling down damaged structures or causing damage from water used for extinguishing fires.
- Risks by inappropriate damage assessment of heritage.
- Confusion and delays due to lack of coordination and preparedness.

Salvation and preservation of cultural heritage should therefore start as early as possible after the disaster.

Emergency intervention measures of technical and non-technical character should be taken promptly. Technical measures include special damage assessments, documentation of the building and its condition (photos, drawings, reports etc.), emergency propping, removal and safe storage of significant elements of the building, emergency repairs. Non-technical measures refer to emergency planning concerning cultural heritage salvation, the deployment of special emergency response teams with clear roles and responsibilities for each member and equipped with safety equipment and appropriate material resources. It is also essential to have built complementary pre-disaster capacity and to have initiated educational and communication actions. No matter how well prepared, it should be expected that existing planning, preparedness, as well as knowledge and knowhow will be challenged by unexpected post-disaster circumstances.

At any case, pre-disaster awareness of the significance of cultural heritage pays off during the pressing emergency phase and also, having in place a strategy for the preservation of cultural

heritage including institutions and legislation, as well as inventories and documentation of historic buildings and their contents. Furthermore, it would be greatly advantageous to already have a disaster governance structure in place that also integrates the cultural heritage community.

Nepal Cultural Emergency Crowdmap Initiative

On April 25, 2015 at 11:56 AM local time, a 7.8 magnitude earthquake devastated Nepal, including Kathmandu Valley districts. The earthquake left over 7,000 people dead and destroyed almost 200,000 houses, while many hundreds of thousands more were damaged. Thirteen out of the seventy-five districts in the country were severely impacted.

Nepal is recognised as a country of many ethnic groups, cultures and faiths, has rich tangible and intangible cultural heritage. Four of its cultural and natural heritage sites have been inscribed on the World heritage list. Soon after, a crowd mapping initiative was launched by International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) in collaboration with other international agencies and several cultural heritage professionals. It aimed at collecting on-the-ground reports of the damage caused to cultural heritage in Nepal as a result of the earthquake, particularly those reports that may not be collected by other actors. These reports come from residents, social media (via Facebook and Twitter hashtags), news agencies, and cultural heritage professionals.

Each report in the compiled heritage damage report summary contains information on: • Source of the information • Location • Type of heritage (generally the name of the temple or site) • Extent of the damage (minor, medium, major) • Whether or not protection or recovery measures are known to have been taken • Corresponding report number from the crowdmap, if applicable • Any additional notes.

About 85 reports were collected. Based on an understanding and analysis of data collected through the Kathmandu Cultural Emergency Crowdmap Initiative, as well as independent reports the following initial recommendations were made on the salvation and recovery of Nepal's cultural heritage.

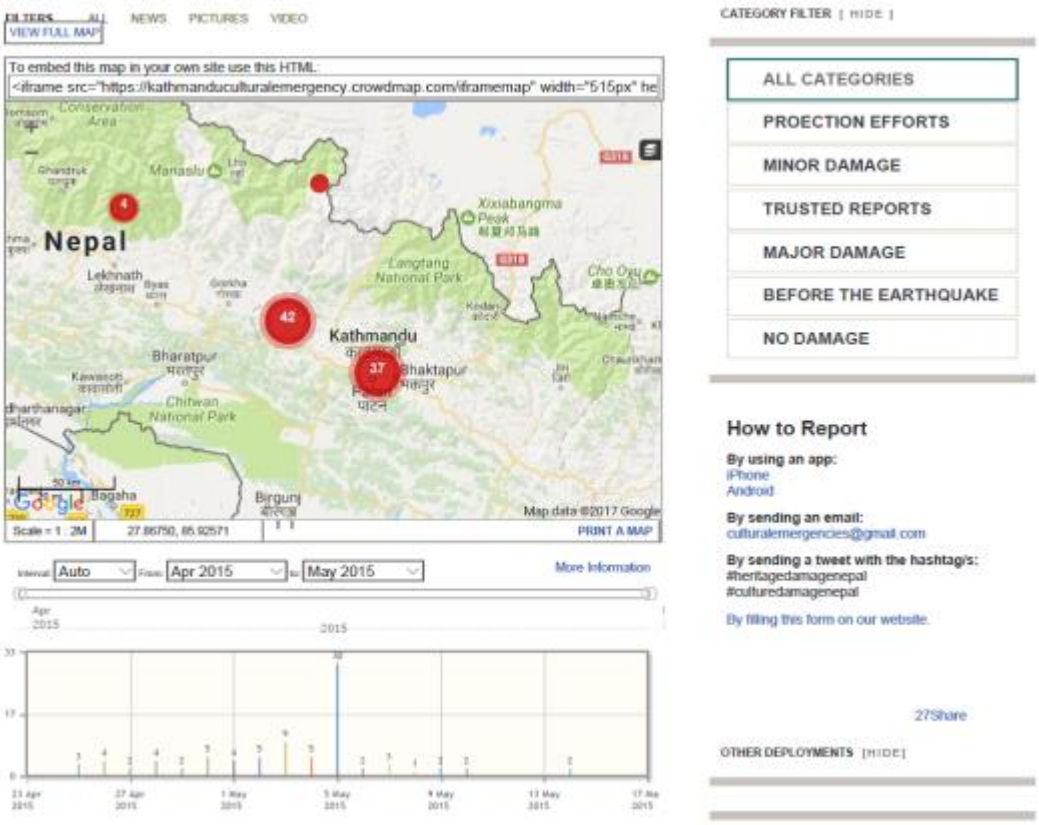

Figure14. Kathmandu Cultural Emergency: A crowd map created by ICCROM. Source: ICCROM, ICOMOS-ICORP (2015) Overview report of the Nepal Cultural Emergency Crowdmap Initiative.

Suggestions for further reading

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SECTION 2: CITIES AND DISASTER RISK REDUCTION

1. Cities: places of complexity

Cities are complex three-dimensional spaces in which social, political and economic organisations interact in different ways and at multiple levels with buildings, infrastructures, production and service facilities, open areas. These interactions reflect the cultural features and the degree of technological development of cities and their inhabitants.