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TOWARDS DEVELOPING METHODOLOGY FOR INTEGRATED RISK MANAGEMENT OF CULTURAL HERITAGE SITES AND THEIR SETTINGS

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Introduction

Cultural heritage is confronted with various kinds of risks, especially in the areas prone to natural hazards such as floods, fires, earthquakes etc. These hazards have caused destruction of significant cultural property in the past. Widespread damage caused to the historic town of Bam (Iran) from 2003 quake and the historic area of Edinburgh (UK) from fire in 2002 is still fresh in our memory. Besides, wars and terrorism have also been great man-made sources of destruction of cultural heritage in the past. Who can forget destruction caused to the historic towns of Palestine, Bamiyan Buddhas in Afghanistan and most recently loss of precious cultural properties in Iraq? Besides these more recent events, there are numerous accounts in the history, when we had to loose irreplaceable cultural resources due to various natural and man-made hazards.

However, cultural heritage is at risk not only to impending disasters but is also exposed to various risks during emergency and post disaster recovery and reconstruction phases. Many post earthquake reconstruction measures have served to destroy significant components of cultural heritage rather than protecting them. This is exemplified in the case of reconstruction following the Gujarat earthquake of January 2001, in which many historic towns, traditional villages and cultural artifacts of various kinds including museum collections suffered extensive damage, and some were completely wiped out (Jigyasu 2002). Ironically, during the relief and reconstruction phase, much more damage was inflicted on the cultural property through demolition and neglect and in some cases; the fabric of many historic towns was completely replaced with 'modern' urban layout, which was totally insensitive to the local way of life (ibid). Also, many collections in the historic Bhuj museum, which had suffered extensive damage, were looted or destroyed in the absence of a proper plan in place.

Similar negative impacts of post-disaster reconstruction are also seen in Marathwada region in India following 1993 earthquake, where traditional /vernacular knowledge systems were totally neglected in favor of 'modern' design and technology, considered as the panacea for the development of 'backward' rural communities. Ironically, engineers contributed tremendously in developing misperceptions of the local community against the use of stone and wood, which was the traditional building material for vernacular housing in the region (Jigyasu 2000). Undoubtedly cultural heritage is put to risk not only from the hazard itself but also from lack of preparedness for emergency situations and from mis-directed actions taken during post disaster emergency and rehabilitation phases.

However, most risk factors are slow and progressive but contribute significantly towards making cultural heritage weak and vulnerable to potential momentary hazards. These factors include fast pace of transformation processes resulting from the increasing population, urbanization, development pressures, poverty and not to forget human vandalism and carelessness. A significant example that can be considered here is the alarming increase in vulnerability of significant cultural heritage located in the Kathmandu Valley of Nepal[1] to imminent earthquake.

It is important to mention here that risks to cultural heritage are not only limited to monuments but also extend to urban areas[2] in which these monuments are located historically or got engulfed by urbanization. In fact, these historic areas have not received the attention or support they deserve to maintain their vitality and quality, protect their

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[1] Kathmandu valley in Nepal has Eight World Heritage Monument Zones located within the historic towns of Kathmandu, Patan and Bhaktapur. However in light of the threat to this significant cultural property from the fast pace of transformation processes, UNESCO has recently included the site in the list of 'World Heritage Sites in Danger'.

[2] These historic urban areas are still-ignored cultural resources defined through their distinct morphology, urban fabric, architecture, community structure and boundaries, which have carefully evolved through sensitive understanding of the local communities about their environment in which they have co-existed harmoniously, sustaining various inter-relationships and built environment over generations.

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structural integrity and heritage values, and stimulate their local economic base as their populations, occupancy and economies undergo various incremental processes of transformation as a result of which, the traditional urban boundaries are breaking up, disturbing delicate ecological relationships and exposing these areas to increasing risks from external hazards. Moreover, local communities are loosing control over their own resources as traditional management systems are getting eroded and increasingly replaced by alien systems, which in many cases prove to be ineffective in reducing risks to local communities inhabiting these areas. Another consequence of these factors is the gradual disappearance of traditional skills, crafts and cultural practices, putting living aspects of heritage at risk[3].

Importantly many of these heritage components, which are at high risk, do not even come under the official definition of heritage in many countries due to the inappropriate heritage policies, which are still monument-centered and do not integrate heritage needs in urban and regional planning programs and policies, especially with regards to preparation for impending disaster situations.

How much cultural heritage we will need to lose before national and local governments and the international community provide support to their continued existence? How many more unique places will disappear and with them the examples of past skills, building details and neighborhood configurations that have lessons for the future? Needless to say here that Cultural Heritage Risk Management is the real need of the hour.

Towards developing framework for Integrated Risk Management

At the outset, it is clear from the above discussion that there are complex factors, which put cultural heritage at risk in a particular context. Therefore Cultural Heritage Risk Management is not a simplistic proposition that can be merely reduced to taking some measures for expected emergency situations. Rather addressing this subject requires a much deeper thinking both for the underlying causes that put cultural heritage at risk and also their long-term implications.

The universally accepted definition of risk is that it is the

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[3] In fact many of these living aspects of cultural heritage have effectively contributed towards mitigating the impact of disasters, and also coping and recovering from them.

product of hazard and vulnerability. This requires us to take a re-look at our understanding of these very terms and their inherent relationships. More fundamentally, we also need to redefine cultural heritage so as to be able to move beyond the prevalent 'monument-centered' approach.

1 The understanding of hazards, vulnerability and their relationship to risk

Risks to cultural heritage may stem from exposure to one or more hazards and other determinants. Therefore it is important to incorporate specific actions / strategies for specific kinds of hazards and at the same time facilitate a holistic understanding of risks to cultural heritage from multiple hazard sources.

This also implies that we understand the inherent link of physical vulnerability of both movable and immovable cultural heritage to that resulting from social, economic and 'development'[4] processes. For example, in case of risks to museum collections, the vulnerability of the collections are inherently linked to the building in which they are housed and also the social, political and economic context in which they are located. All these factors need to be taken into account for effective risk management of cultural heritage.

Conventionally, vulnerability is understood as a 'product'; defined as exposure of cultural heritage to potential risk/ disaster situations at a particular point of time. This is well-accepted definition and has led to the development of several scientific tools for making its assessment.

However vulnerability is not only a 'product' but a 'process' as well, resulting from various factors, which contribute towards its change over time. Therefore we need

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[4] 'Development' is a relative term and is defined by the parameters set by those who define what development means for a particular community. Therefore it should not always be taken as a positive term with uniform connotations. At present, the universally accepted model for development is the 'economic growth model', behind which the basic assumption is an underlying duality and separation between 'we, the experts' and 'they, the weak vulnerable communities'. Therefore the following may be taken for granted: -
- 'They' are 'poor', 'weak' and 'ignorant'
- 'We' can decide what is best for 'them' and provide them with our time-bound recipes.
- 'We' know their problems and can solve them based on 'our expertise'.
- We can 'develop' them and can make 'disaster resistant communities'. (Jigyasu 2001)

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to assess whether vulnerability has increased, decreased or reinforced over time, especially with respect to disaster situations. This will also enable us to test the effectiveness of risk management mechanisms that are put to test in specific disaster situations and thus will serve as monitoring system for policies and programs that are already in place.

2 'Disaster' and its relationship to 'Risk'

It is also important to understand the term 'disaster' and articulate its relationship to 'risk'. Thinking of 'Disaster', it is a term, which has been defined, understood and packaged by the so-called 'experts' to an extent that disaster reduction has become merely a problem solving exercise. The definers declare what they perceive as a problem and how they intend to solve it (Dombrowsky 1998). In most of the perspectives that are being offered[5], disaster is generally defined as linear objective reality, with a precise starting and an ending point and various phases in relation to disaster are categorized as pre, emergency and post disaster phases and consequently various risk mitigation measures are devised, considering these phases to be strictly exclusive.

In fact, disaster has no precise starting and ending points. Rather, disaster situations need to be seen in a continuum, as actions taken during various phases have an impact on each other. This means that we need to establish backward and forward linkages while deciding various actions and interventions at various stages (Jigyasu 2003).

Another related issue is the absence of an interface between the experts and the local people, as a result of which, this externally perceived reality of disaster constructed by 'experts' overlooks the 'reality' experienced by the victims. Ironically, 'disaster' itself is not a 'universal reality' to fight against, rather it is a result of multiple 'constructs' based on experience and perceptions of the victims as wells as experts (Jigyasu 2004). The former may well have mechanisms to adapt to and thus live with inherent risks of disaster situations through their own resilient mechanisms rather than only thinking of resisting in the manner that experts may think appropriate through heavy use of technology. This human perspective for disasters is essential, especially when dealing with cultural heritage at

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[5] Gilbert (1998) has classified numerous theoretical approaches to disasters into three main paradigms. The first is disaster as a duplication of war (catastrophe can be imputed to an external agent; human communities are entities that react globally against aggression). The second is disaster as an expression of social vulnerabilities (disaster is the result of underlying community logic, of an inward and social process). The third is disaster as an entrance into a state of uncertainty.

risk.

It is also important here to articulate the relationship between disaster and risk. While the former is based on actual experience, the latter is about comprehending a scenario for the future based on the present vulnerability situation. Moreover risks contribute to disasters as much as they result from disaster situations. In fact, disasters are part of overall risk situation and also certain risks are associated with specific disasters. Thus, disaster management is an important component of risk management. Comprehensive understanding of risks can give us basis for taking proactive measures to control these vulnerability processes so as to reduce the risks that can be anticipated in the future. In terms of Cultural Heritage Risk Management, this implies a new paradigm for conservation, which is proactive rather than being reactive and is aimed at protecting the present of 'the past' by anticipating its future.

3 The understanding of cultural heritage

As remarked before, comprehensive understanding of cultural heritage is also a pre-requisite for evolving an integrated framework for risk preparedness. Recently, we have observed that internationally, the definition of cultural heritage has expanded in its scope and nature. From merely monuments, archaeological sites and movable heritage collections, various categories of cultural heritage have been recognized such as historic urban areas/towns, vernacular heritage, cultural landscapes and even living dimensions of heritage. The last one is still a relatively new category, which will be addressed later in this paper.

This is certainly a positive development. However, an exclusive approach that may result from too much categorization must be avoided. Rather, an integrated approach aimed at comprehensive understanding of the multifaceted dimensions of the cultural resource in question, must be adopted. This clearly implies, three important elements of the cultural heritage, which are worthy of consideration in themselves and for their interrelationships, namely local communities (the bearers), ecology (human-environment relationships), built heritage including museum object and collections (the physical manifestations). So cultural heritage at risk implies putting one or all of these elements at risk thereby threatening the authenticity, integrity and sustainability of the resource. This even holds true for select monuments, as they also exist in a definite setting, which defines specific relationships to these three key elements.

This implies that risk preparedness for cultural heritage

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and its setting will involve (Jigyasu 2003): -
- Community preparedness through awareness and training.
- Environmental management (this also involves efforts in preventing natural hazards themselves).
- Mitigating risks to built heritage and museum collections through physical interventions.

By making this understanding explicit, we will be able to sensitize diverse stakeholders who directly or indirectly manage the heritage (needless to say, politicians and administrators, who often play the crucial role in emergency and recovery) through their interventions. This will sensitize them to the need of addressing (in their own limited capacity) the underlying causes that create vulnerability of cultural heritage to hazards and put it to risk.

4 Risk Management of living heritage.

The term 'Living' Heritage has two fundamental dimensions. The first, dealing with those aspects of heritage, which are still living[6] and the second dealing with heritage components, which exist in a living environment[7] (Jigyasu 2003). It is important to make this distinction explicit right from the beginning as each of these dimensions have their own specific characteristics as well as associated risks.

The living dimension is certainly one of the most important aspects of cultural heritage in many cultures of Asia and Africa, which is now at high risk due to various reasons mentioned before and therefore needs to be given special emphasis within the overall scope of Cultural Heritage Risk Management. Such an approach will also emphasize the role of local knowledge and capacity in reducing disaster vulnerability and thus articulate the strengths that are embedded in our cultural heritage to

confront these risks and not merely the weaknesses by over-emphasizing the vulnerability situation [8]. Living cultural heritage, both in its tangible and intangible form is indeed a repository of these knowledge systems, which can be evolved to address changing needs and technologies for risk prevention and mitigation. Integrating cultural dimension in education, awareness and training can help in preparing the ground for a much wider and dynamic role of cultural heritage in risk preparedness and may not be considered merely as static entities that are to be protected from various kinds of risks.

In this respect Cultural Heritage Risk Management gets inherently linked to the issues related to cultural continuity and compatibility, livelihood sustainability, community empowerment and equity, local governance and management of natural resources including land. This reinforces the need for creating interface between cultural resource management, disaster management and development challenges and will have far reaching consequences on bringing much needed synergy between conservation and development, which have till now been generally seen as mutually contradictory.

5 Components of Integrated Risk Management

'Risk management' is a well-developed subject outside the heritage domain and has well-defined components and universally accepted terms and definitions. It includes various proactive tools, techniques, strategies and actions for risk assessment and control at various stages with respect to a disaster situation. In the similar manner, Cultural Heritage Risk Management can also be organized primarily under the universally accepted phases of risk management (e.g. risk assessment, riskevaluation, monitoring, prevention/mitigation, disaster preparedness, emergency response, long term recovery etc.). (Jigyasu 2003)

An important dimension of this integrated risk management framework is that risks are not only assessed with respect to various hazards such as earthquakes, fires, armed conflicts etc. Rather specific cultural heritage site or property is put in the center and all the factors that expose it to the risk are assessed and addressed together under the various components of risk management framework mentioned above. These also include those risks, which are

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[6] The living aspects of heritage deals with rituals and practices, skills and crafts, performing arts, vernacular building systems, ecological systems characterizing the way of life of local people, which have evolved over time and are still surviving in similar or modified form. This dimension includes both tangible and intangible aspect of heritage and tends to seek the interrelationships that contribute to their living nature.

[7] 'Heritage components in a living environment' implies dealing with their present context. Here the primary issues are concerned with protection and management of those significant components of heritage, which still survive in the present in totality or in parts, although as mute testimony to the past. However they find themselves in an entirely different context. The challenge for their protection and management is especially seen in those communities, which are very dynamic and are witnessing rapid social and economic transformation processes, by choice or compulsion.

[8] This aspect was investigated by the author in his doctoral research titled 'Reducing Disaster Vulnerability through Local Knowledge and Capacity - the Case of Earthquake-prone Rural Communities in India and Nepal' (1999-2002). The research sought the potential role of local knowledge, skills and resources for planning and mitigation measures to reduce vulnerability of rural communities against earthquakes in India and Nepal.

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associated with specific hazards in question.

By following this approach, all kinds of risks; direct or indirect, hidden or evident, implicit or explicit, to various categories of cultural heritage such as historic building, archaeological site, cultural landscape etc. can be elaborated and all the factors exposing a particular cultural heritage property or site to risk will be assessed for their impact on each other as well as on the property in question.

Such an approach will have profound implication on developing methodology for risk assessment of cultural properties and sites, on the patterns of Environmental Impact Assessment (EIA), which has now become universally accepted practice before approving any big development project. In the similar manner, risk assessment and evaluation exercise can be undertaken for various cultural heritage sites or properties by developing a 'Risk Model' based on specific indicators by undertaking integrated vulnerability and multiple hazard analysis.

Risk management tools and strategies are well defined and signify an explicit approach for heritage protection and management. However these cannot be looked in isolation. Rather risk management should be seen as one of the important components of the overall management plan for a cultural heritage site or property. This will require strong integrated management system, with effective heritage policies as well as integration with existing plans and systems for various development sectors[9] that may have direct or indirect implication on the particular site or property.

Recent Initiatives

1 ICCROM Training Kit on Risk Preparedness for Cultural Heritage

Considering the issues and challenges confronting risk preparedness of cultural heritage[10], there is an urgent need for awareness, education and training among key stakeholders to address the needs of heritage confronted with various types of risks in pre, emergency as well as post disaster phases.

Training kit can serve as an important tool to prepare background for conducting training programs in various geographical contexts, catering to the general principles related to the core subject as well as specific needs of risk preparedness in a particular context.

In response to the widely felt need, ICCROM[11] has recently developed a training kit on risk preparedness for Cultural Heritage[12]. The kit aims at sensitizing disaster managers, relief workers, public agencies and NGOs to conservation concerns and approaches and accordingly to ensure definition and prioritization of heritage values as a part of risk preparedness measures. It also aims to integrate the concern for heritage in overall planning for risk management so as to ensure prior judgments about the importance and place of heritage in planning (Jigyasu & Stovel 2004).

The ICCROM risk preparedness training kit is conceived as a tool for capacity building at a regional level. It is meant to have a ripple effect in sensitizing each region to preparing for cultural heritage at risk. The ultimate objective is to

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[9] Disaster management is one of the important sectors of development and therefore should not be considered separate from the latter. This is important if risk mitigation has to become as an integrated part of development. The relationship between disaster and management has been well articulated by Cuny (1983) and Lewis (1999)

[10] 'Risk Preparedness for Cultural Heritage' is another term that is widely used for 'Cultural Heritage Risk Management' as both these terms essentially mean the same. However the former emphasizes preventive measures to be in place for mitigating risks during

preparedness (pre-disaster), emergency response as well as long-term recovery phases.

[11] ICCROM has been very active in developing and advocating the need of risk preparedness for cultural heritage ever since this initiative emerged during 1990s round tables in Paris. An important contribution of ICCROM in this regard has been publication of a management manual on risk preparedness for world cultural heritage in 1998 by Prof. Herb Stovel. The manual clearly outlines the main principles for preparing various typologies of cultural heritage from various natural hazards such as fires, earthquakes, floods etc. Besides it has also been instrumental in organizing workshops and training programs in various geographical contexts such as Dubrovnik and Santo Domingo[11]. ICCROM has helped Government of Dominican Republic to organize two training workshop on the subject in 2001 and 2003. Recently in March 2004, ICCROM organized a training course in India in cooperation with Archaeological Survey of India. The primary learning objectives of the training course were two fold. Firstly, to assist the participants to integrate concerns for cultural heritage in main stream civil defense planning and Secondly, to test this training kit.

[12] ICCROM Training Kit on Risk Preparedness for Cultural Heritage has been developed by the author (Rohit Jigyasu) in his capacity as independent consultant to ICCROM from January to March 2003

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enable participants to develop a proactive strategic approach i.e. knowledge on how to develop strategies for advance planning to reduce heritage losses for different types of risk. This can be a byproduct of personal initiatives of the participants after getting sensitized to risk preparedness from a cultural heritage at risk perspective (ibid).

While the teachers engaged in risk preparedness training activities are the primary users of the kit, it is designed to address the specific needs of the secondary users, who are the main clients/stakeholders for improving risk preparedness for cultural heritage. Among these secondary users, it is even more important to sensitize disaster managers (who have no education and awareness about heritage values, needs and resulting considerations) than cultural resource managers, since during emergency, rescue teams, administrators and other stakeholders in disaster management process are the ones in charge of taking decisions, which may prove crucial for protection of cultural heritage in the longer run.

The kit has been based on the integrated framework for risk management, which has been elaborated earlier in this paper. This framework has an implication both on the structure and the content of the training, which is envisaged to have holistic rather than sectarian approach. Therefore instead of organizing course modules on the basis of the nature of hazards (e.g. earthquake, fire etc.), these are organized around various typologies of cultural heritage such as historic buildings, historic towns and areas, cultural landscapes etc. Within each module, all the components of risk management that are relevant to the specific typology of cultural heritage are addressed. Besides, there are also specific modules on topics such as the introduction to integrated risk management framework, the design of disaster management plans etc.

2 Cultural Heritage Concerns in WCDR

UNESCO / ICCROM / Agency for Cultural Affairs of Japan – Thematic Meeting on Cultural Heritage Risk Management was organized as part of the UN World Conference on Disaster Reduction (WCDR) held in Kobe from 18th to 22nd January 2005. More than 20 experts from all over the world attended the meeting.

The recommendations adopted in this meeting urged the Member States to integrate risk preparedness planning for cultural heritage sites into overall risk reduction and disaster management policies and strategies at the regional, national and local levels[13].

Also in conjunction with WCDR, ICOMOS-Japan Scientific Expert Meeting on Risk Preparedness for Cultural Heritage in Asia and Circum-Pacific Region was organized in Kyoto from 15th to 17th January 2005. The meeting brought together experts from the region to discuss the scope for collaboration in this field. The meeting adopted a declaration on the protection of cultural properties, historic areas and their settings from loss in disasters. The declaration stressed on the importance of recognizing risks to cultural heritage through an integrated understanding of physical, social, economic and environmental factors that define its context[14].

An important highlight of WCDR was that for the first time, it explicitly brought forward the need of integrating disaster reduction goals within the larger goals of sustainable development. Clearly there is a big paradigm shift from WCDR meeting in 1995, which was highly technology-centered.

WCDR provided a unique opportunity for heritage professionals to interact with the professional world of disaster management and it was clearly evident that the heritage professionals were the only ones, who were explicitly articulating cultural concerns for disaster reduction in all its manifestations (tangible and intangible, movable and immovable). We also realized that that there exists tremendous potential of forging links with various intergovernmental and national government agencies, international, national and local non-governmental organizations, and educational and research institutions engaged in disaster management and sustainable development initiatives. In fact, many of these share similar concerns as ours and therefore there exists a great scope for networking and collaboration for furthering this important initiative.

The meeting was pioneering as for the first time cultural heritage concerns were formally included in the International Agenda for Disaster Reduction. Unfortunately, we were not so successful in getting these concerns

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[13] The text of the meeting report and recommendations can be accessed at http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-3-3.pdf

[14] The text of this declaration has been posted on the website of the Research center for Disaster Mitigation of Urban Cultural Heritage, Ritsumeikan University, Kyoto; www.heritagerisk.org

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articulated in the outcome document of the conference and the Hyogo Declaration. One of the reasons for this was that cultural heritage is still largely understood as a few select-monuments, and therefore of secondary importance compared to the critical need of protecting lives and properties from disasters.

3 Teamwork for Integrated Emergency Management of Museums

The importance of risk management has also been recognized in the museums sector with the launch of an International Course titled 'Teamwork for Integrated Emergency Management'. It is being jointly organized by ICOM (International Council of Museums), the GCI (The Getty Conservation Institute) and ICCROM within the broad framework of ICOM's Museums Emergency Programme (MEP).This is a three phase course that will span an approximately eight-month period of collaborative learning and capacity building within national museums of eight countries in Asia, namely Thailand, Vietnam, Philippines, Cambodia, Japan, Korea, India and Sri Lanka.

The First Phase of course has just concluded with a two-week workshop (15 - 26 August 2005) held in Bangkok, Thailand. This workshop will be followed by Phase two, a distance mentoring programme over a seven-month period during which participants, working in their own institutions, will follow a programme of practical work that will take them through the processes of a museum risk assessment and the basic steps of an emergency plan. The final phase of the course will involve a meeting of all participating institutions for sharing experiences of the Teamwork process.

This course is a pioneering initiative that aims at adopting an integrated approach for risk management of museum building and its setting, the collections and people (staff and visitors).

It is hoped that this initiative can be furthered by undertaking such training programmes for all kinds of museums at national as well as local level.

Conclusion

The main challenge for us now is to find out ways and means of mainstreaming cultural heritage risk management within the larger goals of disaster reduction and sustainable development. We must plan immediate follow-ups and formulate a coordinated agenda for action and strengthen network among ourselves and with other organizations and

institutions on disaster research and management through engagement in various activities such as creation of database of experts, development of information management systems for cultural heritage response during emergency situations, research on indigenous knowledge and capacity for disaster mitigation, pilot projects on integrated risk management plans for heritage sites and collections as well as education and training programs catering to all stakeholders including the emergency and relief personnel. Visualizing and creating a coordinating mechanism within an intergovernmental setup to carry out all these activities is indeed the need of the hour.

In fact right now we have a chance to play a crucial professional role in the massive task of relief and rehabilitation following the devastating Indian Ocean Tsunamis of 26th December 2004. Many of the hurriedly conceived reconstruction measures are posing a great risk to vernacular traditions of traditional fishing settlements along the coasts. Already, we are getting news of many well-intending donors, who are 'adopting' the villages along the coastline and making hurried designs for 'match box type' housing and 'city-like' plans for these settlements, without any regard to the 'way of life of people'. Moreover, most of these settlements are getting relocated without consideration to the traditional livelihoods and ecological relationships. It is important that as heritage professionals we raise our voice against destruction of harmonious relationships that have been developed by the local communities over generations and demonstrate culturally sensitive solutions for sustainable rehabilitation. This is a unique opportunity to assert our professional role in addressing the issues of recovery and development with a cultural perspective.

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Abstract

Cultural Heritage Sites are exposed to various kinds of risks not only from natural hazards such as earthquakes, fires but also from various man-made factors such as urbanization, development pressures, poverty and misconceptions. This is especially true for 'living' heritage sites, where some aspects of heritage are still living or where remains from the past exist in a new living environment. Both these dimensions have their own specific characteristics as well as associated risks, which most often originate from the settings of these sites.

The paper will elaborate on the methodology for integrated risk assessment of heritage sites and their settings by undertaking multiple hazard analysis as well as the analysis of social, economic and attitudinal vulnerability using both quantitative and qualitative methods. Risks are prioritized on the basis of various indicators used to assess the impact on the integrity, authenticity and sustainability of the resource using 'systems approach'. Moreover all the factors that expose the site to risk are assessed and analyzed for their impact on each other as well as the cultural resource in question. The paper will also elaborate upon the lessons learnt from some recent experiences in application of this approach and will conclude by citing future potential for developing this methodology.

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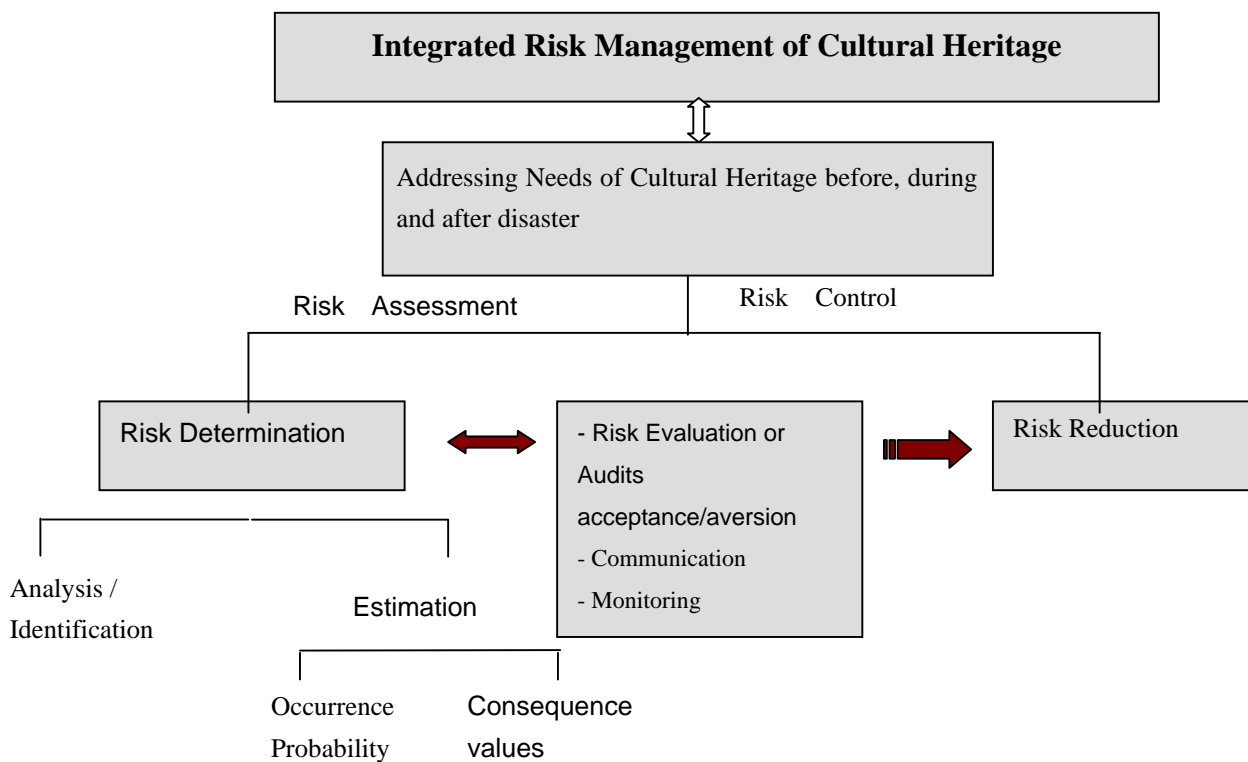
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Historic town of Bhuj devastated by 2001 Gujarat quake in India

Transformation processes in historic urban areas of Kathmandu valley are exposing these areas including the World Heritage Monument Zones to very high risk especially from an imminent earthquake

Integrated Risk Management of Cultural Heritage

Addressing Needs of Cultural Heritage before, during and after disaster

Risk   Assessment

Risk   Control

Risk Determination

- Risk Evaluation or Audits
acceptance/aversion
- Communication
- Monitoring

Risk Reduction

Analysis / Identification

Estimation

Occurrence Probability

Consequence values

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Integrated Vulnerability Analysis ⟷ Integrated Risk Assessment of Cultural Heritage ⟷ Multi-Hazard Mapping