Natural Hazards and Cultural Change Among Traditional Philippine Communities: An Alternative Framework of Analysis

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Natural hazards are natural phenomena that pose a threat to people, structure or economic assets and which may cause disasters (adapted from UN-DHA 1992). Natural hazards include earthquakes, volcanic eruptions, landslides, tsunamis, storms and cyclones, droughts, floods and storm surges, among others. The cultural impact of natural hazards on traditional communities has been the object of debate in the international literature. There is particular disagreement on the capacity of traditional communities to recover on their own without relying on external support, which is itself a possible vector of cultural change.

This article focuses on this issue. It begins with a critical review of existing models of responses of traditional communities to natural hazards as illustrated by examples from the Philippines. An alternative framework incorporating factors accounting for culture change in the wake of hazardous natural events is eventually proposed. It is worth mentioning that this study only covers fast-onset and contemporary events and thus excludes ancient disasters and those resulting from slow-onset hazards like droughts, subsidence, and climatic changes.

## NATURAL HAZARDS AND TRADITIONAL COMMUNITIES IN THE PHILIPPINES

The existing literature on natural hazards and traditional communities in the Philippines is very sparse. Most of the studies dealing with this issue concern the 1991 eruption of Mt. Pinatubo and its impact on the Aeta communities living on the flanks of the volcano (Shimizu 1992, 2001; Seitz 1998, 2000, 2004; Gaillard and Leone 2000). Other notable works include the 12-volume compilation made by the Philippine Institute of Volcanology and Seismology (Phivolcs), the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), and the Ugnayang Pang-Aghamtao Foundation, Inc. (UGAT) during the late 1990s on disaster management among Filipino cultural communities (see Phivolcs et al. 1998, for a summary). This overall assessment covers 'cultural communities' of the Caraballo Mountains, Cagayan Valley and Batanes, the Igorots of the Northern Luzon Cordillera, the Negritoes of Luzon, Visayas and Mindanao, the Mangyans of Mindoro,

the Subanen of the Zamboanga Peninsula, the Manobo and Mandayas of Central Mindanao, the T'Bolis, Tedurays, Bagobos and B'laan of Southern Mindanao, and the Maranaw, Maguindanao, Tausug, Samal and Yakan Muslim groups. However, it chiefly focuses on coping mechanisms and indigenous mitigation strategies rather than on the impact of natural hazards on cultural and ethnic identity. Blolong (1996) also studied the cultural adaptation of the Ivatan of Batanes to typhoon hazards, while Insauriga (1999) concentrated on the awareness and preparedness of Bagobo communities to face different hazards. When seen in tandem with the larger spectrum of the international literature, it is possible to differentiate three models of response of Philippine traditional communities (Figure 1).

The first, so-called dominant, model (Kates 1971, Burton 1972, Mileti et al. 1975, Dynes 1976, Burton et al. 1992), maintains that traditional communities, which closely depend on natural resources for a living are fragile and incapable of overcoming the occurrence of large natural hazards by themselves. Environmental damage is usually so severe that affected communities are deprived of their main resources and are thus forced to rely on acculturating external aid in order

Figure 1. The Different Models of Response of Traditional Communities Following Natural Disasters
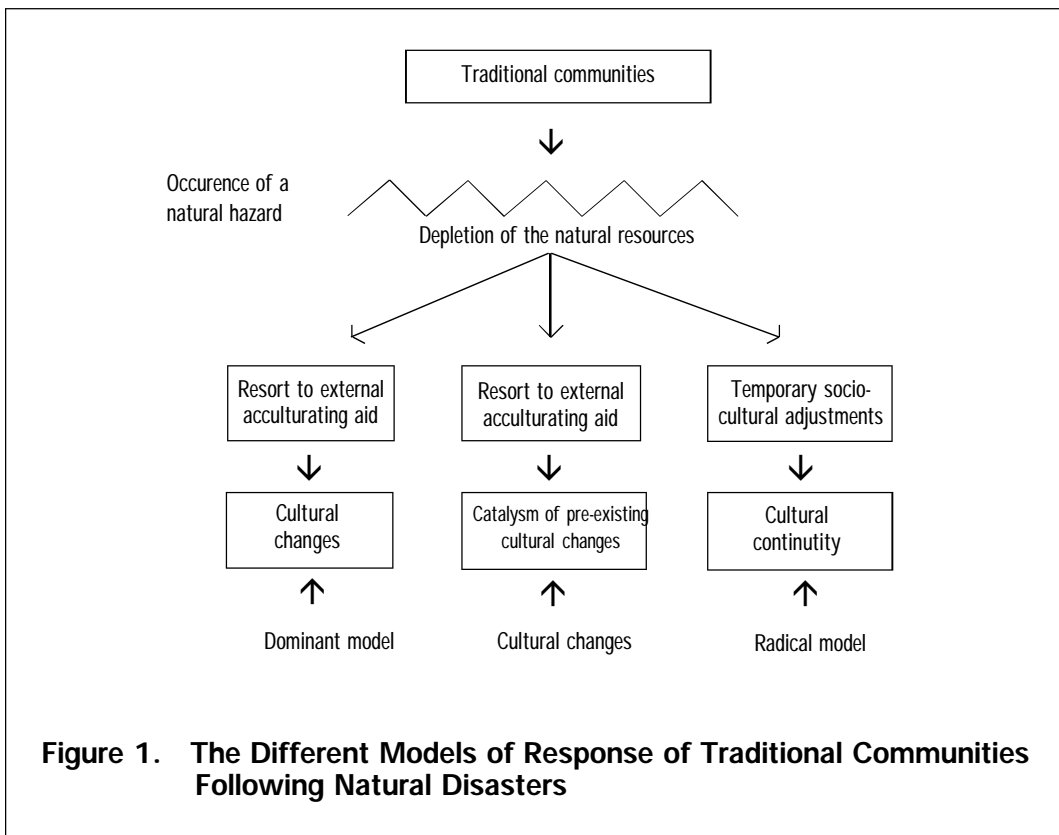
to survive. This model correlates the results of several studies conducted following the brutal awakening of Mt. Pinatubo among the Aeta Negrito communities who previously resided on the upper slopes of the mountain (Shimizu 1992 and 2001; Seitz 1998, 2000, and 2004; Gaillard and Leone 2000). The thick and hot pyroclastic and ash deposits blanketing the upper flanks of the volcano prevented the Aetas from going back to their ancestral lands and forced them to relocate on the foothills of Mt. Pinatubo, which were already occupied by lowland ethnic groups. This caused increasing and intense economic, social and political interactions that led the Aetas to integrate foreign socioeconomic and cultural elements including settlement pattern, religion, language, medicinal treatments, clothing, diet, land tenure, and farming activities.

The second model of response of traditional communities is based on a radically different thesis. Some researchers (Sjoberg 1962, Torry 1978 and 1979) have indeed demonstrated that traditional communities may be very resistant and capable of overcoming the occurrence of serious natural hazards by themselves. This approach asserts that the environmental consequences of large scale events force traditional communities to temporary or more permanent adjustments which do not modify the fundamentals of their social organization. In the Philippines, this model is fuelled by the studies of Blolong (1996) and Cayabyab and de Guzman (1998) among the Ivatans of the Batanes who are able to surmount by themselves the havoc brought on by repeated typhoons, thanks to a wide range of indigenous techniques: multi-cropping, crop compartmentalization, and crop rotation.

The third response model adopts a moderate and intermediary approach. This approach (Blong 1984, Oliver-Smith 1996) argues that natural hazards act as catalysts for ongoing cultural changes. The acceleration of trends of pre-existing acculturation has been witnessed among the Aeta communities that were inhabiting the lower eastern flanks of Mt Pinatubo before its violent awakening in 1991 (Gaillard and Leone 2000). Unlike their ethnic counterpart from the upper slopes of the volcano, the Aetas of the foothills were already living for a long time in close contact with lowland groups and American servicemen on duty at the neighbouring Clark Air Base. By further increasing the social, economic and political dependency of the Aetas on the lowland people, the eruption accelerated the diffusion of western socioeconomic references already widespread before the eruption.

In this short synthesis of studies dealing with the responses of Philippine traditional communities following the occurrence of violent and contemporary natural hazards, I distinguished three theoretical models. It is our contention that further empirical evidence implies that these require further critical reflection.

LIMITATIONS OF THE MODELS

The opposing conclusions of the models described above lead to a questioning of the validity of such generalizing approaches. Two issues may be raised. The first one, recently tackled by Hoffman (1999) and Torrence (2003), is the scale of temporal analysis. Indeed, socio-cultural changes viewed as major transformations a few months, years or even decades after the occurrence of a natural hazard may be seen as slight adjustments over the longer term. The example of the 1991 Mt. Pinatubo eruption and its impact on the Aeta Negrito communities is significant. Ten years after the eruption, the changes that occurred among the communities previously located on the upper slopes of the volcano may seem important (Gaillard and Leone 2000, Seitz 2004) but when placed in a longer temporal frame, the impact of this event appears to be far less significant. During their long history which may date back to the Pleistocene period, the Aetas have had to cope with major environmental and cultural disturbances, including several powerful eruptions of Mt. Pinatubo and earthquakes, climate changes, the arrival of the Austronesian agriculturists, the coming of the Spaniards, and finally the establishment of American military bases on their territory. Yet, they have managed to retain specific cultural traits that still distinguish them from the majority of Filipino ethnolinguistic groups today. Cultural changes and adjustments in the wake of the 1991 Mt. Pinatubo eruption, therefore, should be more nuanced and replaced within a longer temporal scale.

The second problem encountered when trying to model the cultural impact of natural hazards on traditional communities is linked to the difficulty of comparing different events. This trouble has its roots in the uniqueness of each case. During the last two decades, considerable attention has been given to this question in the hazard literature (e.g., Susman et al. 1983, Maskrey 1993, Blaikie et al. 1994, Hewitt 1997). Natural hazards like volcanic eruptions, earthquakes, landslides, typhoons or floods have different inherent characteristics such as diverse speeds of onset, temporal spacing and magnitudes. Moreover, they occur in very different geographical, social, political and cultural contexts that shape the responses and adjustments of the victims. The distinctiveness of the events and the dissimilarity of their contexts of occurrence lead me to question the existence of universal models or patterns of cultural response to natural hazards as those mentioned above. It seems that cultural changes are commanded by an intricate interrelation of several factors that vary in time and space, from one event to another. These factors are physical, sociocultural, geographical, and political in nature. The following discussion describe each of them in light of a new framework for approaching the cultural impact of violent and contemporary natural phenomena on traditional societies.

The nature of the hazard

I have already mentioned that natural hazards have different intrinsic characteristics. The magnitude and the temporal spacing of the hazards directly control the impact of such event on traditional communities. In the Philippines, several studies have demonstrated the capacity of such communities to deal with moderate-magnitude and recurrent phenomena like the frequent typhoons that sweep the archipelago during the rainy season. This is particularly true for the Ivatans of Batanes (Blolong 1996, Cayabyab and de Guzman 1998), the Igorots of the Northern Luzon Cordillera (Ramos 1998), the Mangyans of Mindoro (Rellin 1998), the Manobos of Central Mindanao, the Mandayas of Southeastern Mindanao (Villar 1998), the Yakan of Basilan, the Samal and Tausug of Sulu (Valeroso and Javier 1998) who developed a wide spectrum of indigenous practices to cope with these phenomena (e.g. adapted agricultural strategies, typhoon-resistant houses, typhoon shelters, seawalls, forest conservation, etc.). Conversely, the magnitude of the 1991 Mt. Pinatubo eruption, which led to significant short and middle-term cultural changes among the Aeta communities, was far greater. Moreover, the Aeta had to deal with an unfamiliar phenomenon because the eruption occurred after five centuries of volcanic inactivity.

The extent of damages also played a crucial role in the impact of natural hazards on traditional communities. In the case of the 1991 Mt. Pinatubo eruption, most of the Aeta villages were buried under several meters of hot pyroclastic and onward ashfall deposits, preventing the immediate reoccupation of the upper slopes of the volcano. Relocation downhill in the immediate vicinity of other ethnic groups, with whom acculturating interactions eventually occurred, was a must and no other alternatives were open to the Aetas. On the other hand, phenomena like typhoons and floods more easily allow post-event reoccupation of the stricken area thus helping the victims to recover promptly, as shown by the sample of the Ivatans of Batanes.

The sociocultural context before the event

The pre-event sociocultural context includes the level of acculturation, the relationships between the affected group and its neighbours, the diversity of livelihoods, the cultural attachment to the devastated site and the size of the affected community. The international literature indicates that the deepest cultural changes in response to the occurrence of a natural hazard happen among the most traditional communities. Among the most acculturated communities, the natural phenomenon rather acted as a catalyst for pre-existing processes. Following the 1991 Mt. Pinatubo eruption in the Philippines, the deepest sociocultural changes similarly occurred among the communities which were less acculturated before the eruption, while the most acculturated communities in 1990 underwent little adjustments to

the new environmental and socio-economic contexts (Gaillard and Leone 2000).

The second factor influencing cultural change among traditional communities is the amplitude of socio-cultural differences between the affected ethnic group and its neighbours, as well as the intensity of inter-group interactions before the event. It seems that the larger the gap and the less the interactions, the deeper the cultural changes. Following the 1991 eruption of Mt. Pinatubo, the Aetas from the upper slopes of the volcano, who discovered the way of life of the lowlanders during their stay in the evacuation centres, were the most permeable to cultural change. Conversely, changes were less profound among communities from the foothills of the mountain that had long interacted with neighbouring groups.

The diversity of livelihood is another factor of cultural resistance. The communities that are most vulnerable to cultural changes seem to be those relying on a unique livelihood. It is evident that communities relying exclusively on the natural resources available in their immediate environment are much more vulnerable in the event of partial or total destruction of these resources. In the case of the 1991 Mt. Pinatubo eruption, uphill communities exclusively dependent on agriculture for their living were rendered helpless by the destruction of their fields by metres of pyroclastic deposits. On the other hand, the communities located on the foothills of the volcano which used to rely on several livelihoods turned out to be less affected by the eruption. The wider range of resources allowed them to rely less on external and acculturating support. Similarly, the Ivatans of Batanes plant a large variety of crops guaranteeing food security in the event that some would be damaged by typhoons (Blolong 1996, Cayabyab and de Guzman 1998). This strategy prevents them from depending on external assistance in times of crisis.

The cultural attachment to the site devastated by a natural hazard is also decisive. In the cases of Mt. Pinatubo, the mountain plays a major spiritual role and is the centre of traditional religious beliefs (LAKAS 1991). The post-disaster relocation away from the slopes of the volcano constituted a painful cultural rupture for the Aetas communities affected. Likewise, T'boli people resettled following the 1976 tsunami and the 1995 floods that devastated the southern coast of Mindanao displayed a strong attachment to their homeland and rapidly returned to their former settlements after the events (Phivolcs et al. 1998).

Finally, the size and extent of the community affected seem to be directly linked to cultural change. If the whole community is hit by a hazardous natural phenomenon, resistance to cultural changes looks unlikely, especially because of the absence of communities that are able to play the role of guardian of the pre-event traditions. The 1991 Mt. Pinatubo eruption did not spare any Aeta community (Seitz 1998, 2000,

and 2004; Gaillard and Leone 2000). All the Aetas experienced the evacuation and resettlement centers where contacts with the lowlanders first occurred for the uphill communities. The absence of any intact village, which could have maintained Aeta traditions, did not allow a retreat toward a preserved sociocultural environment.

The geographic setting

The importance of the geographic setting in cultural change following the occurrence of natural hazards is directly linked to the magnitude of the event, the extent of damage and the pre-event sociocultural context. It essentially includes the existence of enough space in homeland-like environment for relocation without encroachment upon other ethnic groups and cultures. In the case of the 1991 Mt. Pinatubo eruption, there was definitely no space available in homeland-like environment for spontaneous relocation. The resettlement sites selected by the government encroached on lowlander territories and favoured contacts between Aetas and their neighbours. Foothill sites, where other Aeta communities spontaneously resettled, also trespassed on lowlander's lands (Gaillard and Leone 2000, Seitz 2004). The role of the geographic setting would be even more evident in the event of a natural phenomenon striking a small island, as has occurred elsewhere in the world (e.g. Tristan de Cunha) and that might happen in the Philippines.

The rehabilitation policy of the affected area set up by the authorities

The fourth and last factor affecting cultural change among traditional communities is the post-event rehabilitation policy pursued up by the authorities. Several studies all over the world (1976 Guatemala and 1982 Yemen earthquakes, 1994 eruption of Mt. Rabaul in Papua New Guinea, 1943-1952 eruption of Paricutín volcano in Mexico) have shown that some cultural changes have been premeditated by the authorities in charge of the rehabilitation of the affected areas. In the Philippines, following the 1991 Mt. Pinatubo eruption, some government officials were also boasting of trying to "civilize" the Aeta through the rehabilitation program set up following the disaster, especially through the resettlement policy and social programmes (Bennagen 1996). However, if it is true that education within the resettlement centres contributed to enlarging the cultural references of the young, major socio-cultural changes among the Aeta communities did not occur directly in response to inputs of the government but rather as a progressive process due to geographic proximity which led to increasing interactions with external lowland culture. This is particularly evident because a large number of Aetas spontaneously chose to leave the relocation centers to settle on available lands in the surrounding foothills (Gaillard and Leone 2000, Seitz 2004).
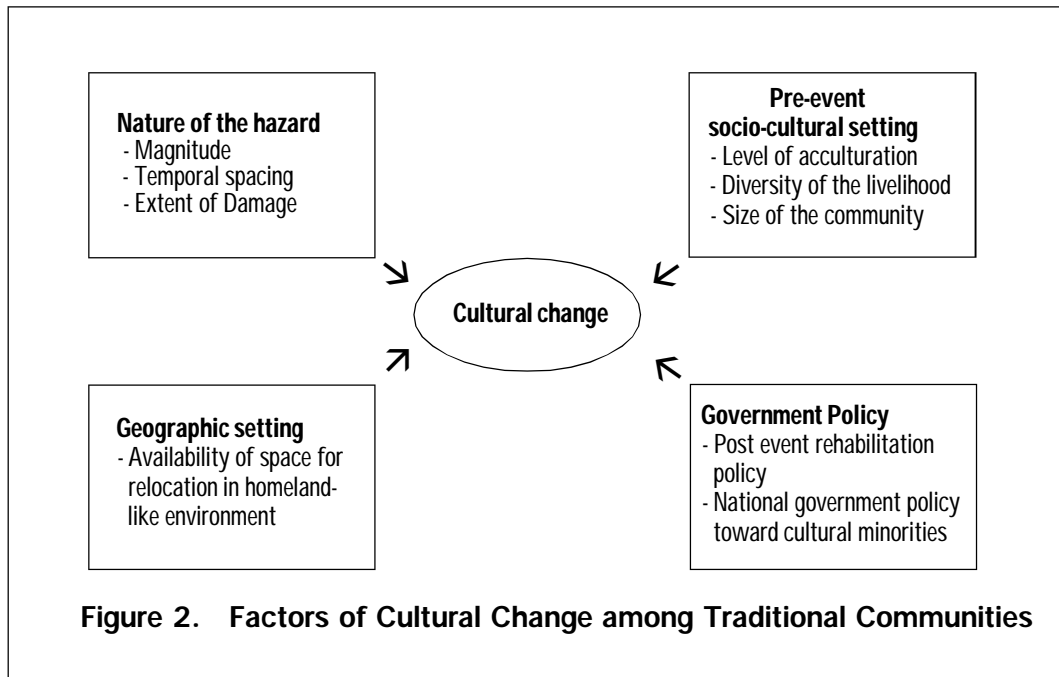
The post-event rehabilitation program cannot be detached from the national government policy toward traditional communities. In most developing countries severely affected by natural hazards, the recognition of traditional communities is often non-existent. For example, at the time of the 1991 Mt. Pinatubo eruption, there were no specific governmental guidelines to protect and defend ethnic minority rights in the Philippines. Hence, it was most unlikely that the Philippine government had appropriate measures for the preservation of the Aeta culture at this time.

CONCLUSION

The previous discussion described several factors influencing the responses of Philippine traditional communities in the face of violent and contemporary hazardous natural events (Figure 2). It is evident that the nature of the hazard, the pre-event sociocultural context, the geographic setting, and the rehabilitation policy set up by the authorities greatly vary in time and space, from one case to another.

The nature of the hazard is certainly one of the most significant elements because it largely conditions the existence or absence of a homeland-like-environment for relocation (geographic setting) and the rehabilitation policy set up by the authorities. It turns out that volcanic eruptions, due to their relative rarity, their violence and the large areas covered by volcanic deposits are among the most powerful vectors of cultural change among traditional

Figure 2. Factors of Cultural Change among Traditional Communities

communities. This is clear in the case of the 1991 Mt. Pinatubo eruption and its impact on the Aeta ethnolinguistic group. Conversely, traditional communities seem to be very resistant to recurrent phenomena like floods or tropical typhoons, which allow the immediate reoccupation of the stricken site, as shown by the Ivatan inhabitants of Batanes Islands.

The capacity and latitude of response of traditional communities to a given hazardous natural event rather lies in the pre-event sociocultural context. Indeed, the level of acculturation, the relationships between the affected group and its neighbours, the diversity of livelihoods, the cultural attachment to the devastated site and the size of the community affected are of great importance in constraining or facilitating the recovery of traditional communities. Small, "very traditional," isolated, and exclusively environment-dependent communities seem to be the most exposed to cultural change in the event of the occurrence of a hazardous natural phenomenon while larger and fairly acculturated groups look less vulnerable.

This remark regarding diffe-rentiated vulnerabilities leads to the larger debate of coping strategies and resilience to hazardous natural events. Burton et al. (1993: 221) have named "loss acceptance" the mode of coping of traditional communities. This means that the loss is recognized and tolerated. They further note that "people prefer to bear known ills rather than take action the outcome of which may be equivocal or uncertain" (Burton et al. 1993: 223). The sociocultural mechanisms leading to such behaviour remain to be explored and research perspectives at the societal level require further examination.

Finally, the relatively easy differentiation of the hazards and pre-event sociocultural contexts mentioned above should not hide the fact that cultural changes in the wake of natural hazards are deeply anchored in local sociocultural and political contexts. These deserve the proper attention in the larger field of natural hazard management. Limited for a long time to the transfer of experience, knowledge and technologies from industrialized to developing countries, natural hazard management programs are now focused toward a more local approach of the problems (see Chester 1993 and Chester et al. 2002, for a comprehensive account). From this point of view, theoretical models, like those existing to evaluate the cultural impact of natural hazards on traditional communities, are not as useful from an instrumentalist perspective. Instead, I highlight a need to assess the local variations of several factors as detailed in the present paper. Together, these factors may constitute an alternative framework for anticipating the consequences of future hazardous natural events.

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