

Differentiated adjustment to the 1991 Mt Pinatubo resettlement program among lowland ethnic groups of the Philippines

Jean-Christophe Gaillard presents the results of a study on the adjustment of two ethnic groups to the post-disaster resettlement program after the 1991 Mt Pinatubo volcano eruption in the Philippines.

Abstract

This study focuses on the adjustment of two lowland ethnic groups of the Philippines, i.e. the Kapampangans and the Ilokanos, to the resettlement program set up in the aftermath of the 1991 Mt Pinatubo eruption and lingering lahars. Victims from both ethnic groups challenged the layout of the resettlement site and the design of the houses. However, the Kapampangans maintained strong links with their native village while the Ilokanos proved to be loosely tied to their territory. The different adjustments to the resettlement program is traced to different ethnic histories and cultures. The top-down and technocratic nature of the resettlement process failed to consider these ethnic factors.

Introduction

Resettlement through geographical relocation is usually considered as the worst alternative to spur people's recovery in the aftermath of a disaster (e.g. Davis, 1978; Oliver-Smith, 1991; Quarantelli, 1984). Resettlement is a very complex process that goes beyond the mere re-housing of the victims. It implies the social reconstruction of homes, social and political ties and livelihoods (e.g. Aysan and Oliver, 1987; Cernea, 1997). These ties are rooted in long cultural, social, economic and political histories (e.g. Scudder and Colson, 1982; Quarantelli, 1984; Aysan and Oliver, 1987) and are often constrained by structural forces (e.g. Wisner et al., 2004). These links are further materialized by visible or invisible cultural symbols which are very much associated with particular places and therefore hardly transposable to new settlements. Re-establishing such a community-place relationship in a new environment requires a long period of time which is in inadequateness with the wish of disaster victims to settle back as quickly as possible (e.g. Davis, 1978; Scudder

and Colson, 1982). For these reasons, resettlement often fails to foster sustainable post-disaster recovery (Oliver-Smith, 1991).

Differences between ethnic groups' response to natural hazards have been stressed at different phases of disaster management, including the post-disaster reconstruction stage (e.g. Perry and Mushkatel, 1986; Bolin, 2006 for syntheses). It is indeed compulsory in the planning of post-disaster resettlement to consider the cultural characteristics of the victims (e.g. Davis, 1978; Aysan and Oliver, 1987). Aysan and Oliver (1987: 12) stress that "the success or failure of any recovery programme relies, in the end, on its capacity to satisfy the cultural needs and requirements of the people who have been victims of the catastrophe." Following the 1906 San Francisco earthquake, Bowden et al. (1977) note that some ethnic groups were more open to the idea of relocation than others. Similarly, Girard and Peacock (1997) underscore that, subsequent to Hurricane Andrew that devastated Florida in 1992, white communities were more eager to be relocated than black people who feared to be further segregated and eventually to lose their standard of living. Unequal incomes between Hispanic and Anglo-American communities greatly affected the capacity of the victims to afford a permanent resettlement solution following the 1983 Coalinga earthquake (Bolin, 1986). Culture and ethnicity are also of great importance in the way victims adjust or not to the sites chosen by the authorities for resettlement (Oliver-Smith, 1994). After the 1963 Skopje earthquake, Davis (1977) indicates that most of the Macedonian victims relocated in other regions of the former Yugoslavia went back to their native town less than two months after their resettlement because their children could not speak the local language. Boen et al. (2001) similarly show that the resettlement of Muslim Indonesians among catholic communities following the 1992 earthquake and tsunami that hit the island of Flores turned out to be a failure and most of victims went back to their original villages.

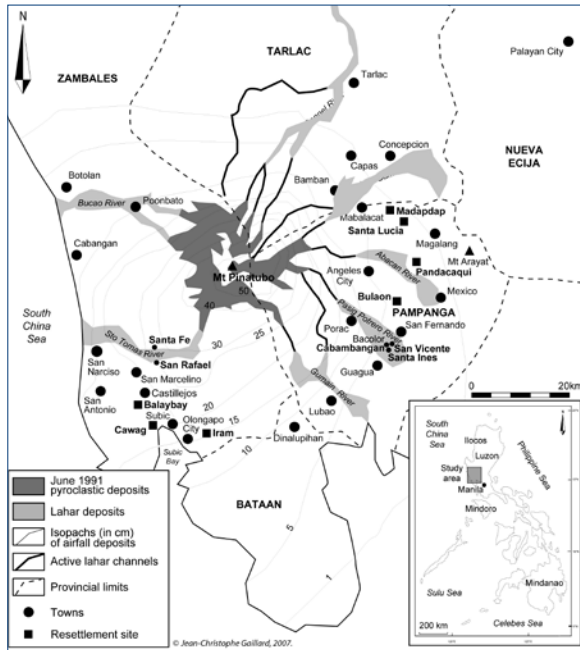


Fig. 1: Extent of the Mt Pinatubo Volcanic eruption 1991.

This paper further investigates how the different ethnic groups which were victim of the Mt Pinatubo lahars in the 1990s adjusted to the post-disaster resettlement program set up by the Philippine government. It addresses both the relocation and re-housing dimensions of resettlement. Noteworthy is that this study only considers lowland ethnic groups and does not encompass the Aetas who live on the slopes of the volcano. The case of the Aetas has been extensively described elsewhere (e.g. Seitz, 1998; Macatol and Reser, 1999-2000). Firstly the paper documents the 1990s Mt Pinatubo lahars and the resettlement policy. Secondly it describes the methodology used for the study. Thirdly the paper focuses on the differences observed between ethnic groups in their adjustment to the resettlement program. Fourthly it emphasizes the causes of such differences and finally it offers some recommendations to foster sustainable post-disaster recovery.

The 1990s Mt Pinatubo lahars and the official resettlement policy

In June 1991, Mt Pinatubo, located on the island of Luzon in the Philippines, violently awoke after five centuries of quiescence in what is considered to be the second most powerful volcanic eruption of the 20th century (see Figure 1). Since then, destructive lahars (volcanic debris flows), triggered by typhoon-associated downpours, tropical monsoon rains and lake break outs, have flowed down the flanks and foothills of the volcano (Umbal 1997). Official figures show that almost 1000 people were killed by the eruption and lingering lahars (Department of Social Welfare and Development Region III, 1999). Overall, about two million people from nine



Fig. 2: One of the thirteen resettlement sites.

different ethnic groups were affected. The economic losses probably reached more than one billion US dollars and more than 140,000 houses were totally or partially destroyed, thousands of public infrastructures were affected and tens of thousands hectares of farmland were buried under deep pyroclastic and lahar materials (Leone and Gaillard, 1999).

An intergovernmental structure, the Task Force Mount Pinatubo, which became, in 1992, the Mount Pinatubo Commission (MPC), was created to develop and implement the government policy of resettlement and oversee other rehabilitation works. Eruption and lahar lowland victims were relocated in 13 sites which were chosen by the government for being safe from lahars, for their well-drained soils and for being easily connectible to water networks. Relocation sites are huge, uniform and are all organized around a central plaza housing the main public buildings (police stations, health center, playgrounds) (see Figure 2). Planners acknowledge that resettlement centers were designed to optimize available fundings. Each family received a piece of land of 94-m² and a 27-m² concrete house equipped with sanitary facilities. The lack of sufficient budget forced the authorities to build houses which first characteristic is to be cheap. In parallel, kilometers of roads and an electric network as well as scores of school buildings were built to meet the needs of the victims. A number of projects, especially the creation of 'productivity centers,' were designed to provide the victims with new jobs near the biggest resettlement areas. From the governmental perspective, resettlement sites and surrounding productivity centers should have been the place where natural resources from Northern Luzon would have been transformed into finished products for the Manila market (Mount Pinatubo Commission, 1994).

Study areas and methodology

This study focuses on two communities of different ethnic origins similarly affected by the lahars of Mt Pinatubo. The first one originates from the villages of Cabambangan, San Vicente and Santa Ines which form the centre of the town of Bacolor in the province of Pampanga. In 1990, there were 11,277 people who lived in these villages known as the cradle of the Kapampangan ethnic group. Between 1991 and 1997, Bacolor was progressively buried under almost ten meters of lahar deposits brought by the Pasig-Potrero river. Ninety-five per cent of the population was relocated in four resettlement sites, Bulaon, Madapdap, Pandacaqui and Santa Lucia, respectively located in the neighbouring municipalities of San Fernando, Mabalacat, Mexico and Magalang (see Figure 1).

The second community formerly lived in the two neighbouring villages of Santa Fe and San Rafael on the outskirts of the town of San Marcelino in the province of Zambales. In 1990, these two villages gathered around 7,300 inhabitants from the Ilokano ethnic group. Santa Fe and San Rafael were buried by lahars of the Santo Tomas river between June 1991 and October 1993. The only bridge connecting Santa Fe to the rest of the municipality of San Marcelino was washed away on 15 June 1991, thus isolating the community. The inhabitants of Santa Fe and San Rafael were mostly relocated in the Balaybay resettlement site, in the neighbouring municipality of Castillejos. Some were also directed towards Cawag in Subic and Iram in Olongapo (see Figure 1).

The upcoming discussion draws on Oliver-Smith's (1991) framework of factors that are critical in affecting people's adjustment to post-disaster resettlement. These factors include the location of the relocation site, the layout of this site, the design of the house and the degree of popular input in the resettlement process. The study relies on a questionnaire-based survey conducted in August 2004 among lahar victims relocated in the Bulaon and Balaybay resettlement sites. At that time, there were 273 families from San Rafael and Sta Fe relocated in Balaybay and 970 households of Cabambangan, Santa Ines and San Vicente resettled in Bulaon. The 20-item questionnaire intended to document the victims' involvement in the decision-making process and people's view on the location of the resettlement site, its layout and the design of the houses. Further questions addressed the relationships that the resettlers maintained with their native villages. Sixty-four face to face interviews were conducted in Bulaon resettlement and 15 in Balaybay or a ratio of around one interview for 18 households. The questionnaire-based survey was complemented by a series of interviews with people from the civil society and disaster management sectors. These included the Mount Pinatubo Commission (MPC), other

government agencies (Department of Social Welfare and Development, Department of Environment and Natural Resources, Department of Public Works and Highways, Department of Health, Department of Agriculture, Department of Education), local government units (LGUs) and non-government organizations (NGOs). Field work was completed with the collection of secondary written documents such as journal publications, conference proceedings, and relevant press clippings from regional and national newspapers.

People's adjustment to resettlement

The survey provides a snapshot of the resettlers' profile that complements early surveys by the Mount Pinatubo Commission (1994) and other research endeavours (e.g. Nelson, 1997). In Balaybay, one third of our interviewees were farmers before the eruption of Mt Pinatubo in 1991 while the rest were engaged in small retailing businesses, studies, overseas works and other low-skill jobs. Today, one third of them are jobless and twenty per cent own small retailing shops. Before lahars buried Bacolor, there was a significant proportion of jobless (17 %) and almost ten per cent of the people engaged in small-scale commercial businesses. Conversely, eight per cent of the interviewees were farmers. In 2004, the proportion of jobless doubled to one third of the resettlers of Bulaon. Eleven per cent also tended to small retailing shops while the rest relied on a large range of mostly low-skill activities. Noteworthy, interviews with key informants show that both study areas were known for hosting a substantial number of rich families but, if those were also victims of the lahars, they had enough resources to resettle on their own outside of the governmental relocation sites. Overall, seventy-three per cent of the victims relocated in Balaybay and seventy per cent of those resettled in Bulaon consider that their standard of living has been decreasing since the eruption of Mt Pinatubo. In 1998, a survey conducted by the Mount Pinatubo Commission matched the results of our interviews and evaluated the unemployment rate at twenty-six per cent in the resettlement sites or 15 percentage points higher than the regional average. At the same time, sixty-four per cent of the population of the resettlement sites were living below the poverty line set by the Philippine government or less than 200 dollars per year and per capita (Mount Pinatubo Commission, 1999). Another study by Nelson (1997) estimated the unemployment rate at thirty-three per cent and showed that sixty-one per cent of the victims living in the resettlement centers complained about insufficient incomes. One of the major issues was the lack of farm land that may have enabled former farmers to re-establish their pre-eruption livelihoods. Initially, the Mount Pinatubo Commission had dedicated large tracts of lands for agricultural activities. However, the annual increase in the number of victims, with the recurrence of

lahar flows, compelled the commission to progressively convert these farm lands into housing lots (Mount Pinatubo Commission, 1995). The survey thus confirms the critical importance of access to livelihoods and other resources in the success or failure of post-disaster resettlement (Cernea, 1997).

Table 1. Assessment of the Bulaon and Balaybay resettlement sites by lahars relocatees in August 2004

Question		Bulaon % of the respondents	Balaybay % of the respondents
Involvement of the victims	Yes	12	0
	No	88	100
Location of the site	Positive	50	60
	Negative	5	40
Layout of the site	Positive	30	20
	Negative	70	80
Design of the house	Positive	91	87
	Negative	9	13

Difficulties in accessing resources in the resettlement sites are rooted in the lack of popular input in the decision-making process. It is widely acknowledged that the participation of the victims in the planning of the resettlement is a prerequisite to sustainable post-disaster recovery (Davis, 1978; Scudder and Colson, 1982; Oliver-Smith, 1991). However, the Mt Pinatubo resettlement program was top-down in nature and few decisions trickled down to the victims (Anderson, 1993; Banzon-Bautista, 1996). In both Balaybay (100 % of the people surveyed) and Bulaon (88 %) resettlement sites, most of the relocatees were not involved in the choice and layout of the site and in the design of the houses. They were forced to accept the program planned by the Philippine government. Only in the village of Cabambangan in Bacolor, a significant fraction of the people (43 %) were asked, through the village chief, to choose which of the resettlement sites they preferred.

Poor choices of site for relocation and inadequate layouts are frequent causes of failure for such resettlement programs (e.g. Aysan and Oliver, 1987; Oliver-Smith, 1991). In Balaybay, however, sixty per cent of those interviewed admit that the site is fine, yet poorly accessible for thirty-three per cent of the victims (see Table 1). In Bulaon, fifty per cent of the relocatees agree with the site but twenty-seven per cent say that in any way they had no other choice. Seventeen per cent also consider that it is too far from Bacolor. More problematic is the layout of the resettlement sites which is challenged by respectively seventy per cent and eighty per cent of the people of Bulaon and Balaybay.

In Balaybay, sixty per cent complain about the lack of running water system, thirty-three per cent about the small size of the lots and twenty-seven per cent about the lack of public facilities. In Bulaon, forty-five per cent of the people critic the small size of the lots, forty-four per cent the lack of trees and other vegetation, twenty-eight per cent the overall difference with their native villages. As in many other instances (e.g. Davis, 1978; Aysan and Oliver, 1987), the design of the house is however the main issue with only thirteen per cent of positive rating for the people of Balaybay and nine per cent in Bulaon. In Balaybay, forty per cent of the relocatees judge that it is too small, especially the kitchen and the bathroom. Therefore, seventy-three per cent of the people enlarged their floor area by building additional rooms or adding terraces. In Bulaon, seventy-eight per cent of the resettlers consider that the house is too hot and sixty-two per cent that it is too small with the same critics regarding the bathroom and the kitchen. Eighty-one per cent of the people built additional rooms or added a second floor to their small house.

Table 2. Relationships maintained by Bulaon and Balaybay relocatees with their native villages in August 2004

Question		Bulaon % of the respondents	Balaybay % of the respondents
Visit to the native village	Once a week or everyday	23.5	0
	Once a month	18.8	26.7
	Once a year	20.3	46.7
	Special occasion	35.9	6.7
	Never	1.6	20
Precinct of vote	Native village	100	0
	Relocation site	0	100
Will to return to the native village	Yes	67.2	33.3
	No	20.3	53.3
	Do not know	12.5	13.3

If the people of Balaybay and Bulaon are similarly challenging their resettlement site and houses, significant differences arise when it comes to the relationship they maintain with their native village (see Table 2). Most of the people of Balaybay (47 %) visit their native villages of Santa Fe and San Rafael once a year, mainly to visit friends or relatives. Twenty per cent of those surveyed never go back to San Marcelino. On the other hand, forty-two per cent the people of

Bulaon maintain regular relationships with Bacolor on a monthly or more often basis. Some (9 %) actually go back to their native village everyday to attend to their land or to do some business. Thirty-six per cent admit that they visit back Bacolor for special occasions like fiestas, commemorations, special masses, birthdays, weddings, etc. The fiestas and the masses are actually consensual events as respectively sixty-nine per cent and twenty-seven per cent of the people go back to Bacolor for these reasons. In addition to maintaining strong links with Bacolor, the resettlers reproduced in Bulaon the territorial and identity markers that remind their native town. Administrative subdivisions, churches, schools are all named after the village where the victims come from. The village councils of the native villages are also maintained and overlap with the new administrative units organized by the Mount Pinatubo Commission (see Figure 1). Memory is further kept through the



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Fig 1. Anti-drug campaign in the Bulaon resettlement site launched by the Cabambangan youth village council (SK- Sangguniang Kabataan).

religious ceremonies and the local or municipal fiestas of Bacolor. Such a reproduction of territorial markers does not exist in Balaybay.

The most startling difference between the people of San Marcelino resettled in Balaybay and those of Bacolor relocated in Bulaon is however the place where they registered for casting their electoral vote. One-hundred per cent of the inhabitants of Balaybay registered in Castillejos as soon as they reach the evacuation centres where they stayed during the construction of the resettlement site. On the other hand, one-hundred per cent of the people of Bulaon still vote in Bacolor. During the 2000 census of population, many victims from Bacolor also refused to be counted in San Fernando (Orejas, 2000). This aspect is crucial since the registration on the voter lists on one or the other municipality determines the amount of a tax, the Internal Revenue Allotment (IRA). This tax constitutes an important part of the towns budget. It is then easy to imagine the conflicting interests than can occur between the mayor of San Fernando and that of Bacolor. The first one provides the 'exiled' community with the basic commodities (water, electricity, collection of the garbage...), while the second one justifies the registration of the victims on his electoral lists by the state of calamity (see Figure 2).

Finally, thirty-three per cent of the victims relocated in Balaybay plan to go back to Santa Fe and San Rafael. On the other hand, sixty-seven per cent of the people of Bulaon want to move back to Bacolor as soon as possible. A large number of victims actually already relocated back in Bacolor despite the lingering lahar threat as well. In 1997, an informal census conducted by American sociologist K. Crittenden counted 592 people in Cabambangan, Santa Ines and San Vicente (Lacsamana and Crittenden, 1997). Eventually, the 2000 national census recorded 2,115 people in the same area or an increase of 1,523 people who came back from the different resettlement sites.

Ethnic factors in differentiating responses to resettlement

The people of Balaybay and Bulaon similarly challenge the resettlement program of the government. Yet, they greatly differ in their attachment to their native villages. The Kapampangans of Bulaon maintain strong links with Bacolor while the Ilokanos of Balaybay seldom go back to San Marcelino and never reproduced territorial markers. The reason for these dissimilar behaviours lies in different ethnic histories, social systems, values and cultures.

The very strong attachment of the people of Bacolor to their native town has been widely acknowledged (Crittenden, 1997; Lamug et al., 1999; Gaillard, 2002). When the Spanish conquistadors discovered



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Fig 2. Conflicting interests in the Bulaon resettlement site. The 'Iwasan ang Dengue' signboard shows a health program in facing dengue outbreaks provided by the municipality of San Fernando. On the other hand, the lighting system is supplied by the Mayor of Bacolor Buddy Dungca.

the southeastern foothills of Mt Pinatubo in 1571, they found large Kapampangan communities in the place now known as Bacolor. The town eventually bears a rich history and cultural heritage. From 1706 to 1904, Bacolor was the provincial capital of Pampanga. It had even been elevated to the rank of national capital of the Spanish government during the two years of British occupation of Manila from 1762 to 1764 (Henson, 1963; Larkin, 1993). Following the eruption of Mt Pinatubo, the town has never been abandoned (Crittenden, 2001; Gaillard, 2002). The role of the parish church is particularly interesting to explain why the people of Bulaon regularly come back to attend masses, fiestas and other ceremonies. Given its history and remarkable architecture, the church was, until the awakening of Mount Pinatubo, more a symbol representing Bacolor to the inhabitants of the neighboring municipalities. With the crises and the ceremonial practices that took place in at that time, it acquired a stronger meaning beyond its architectural and religious value. A female interviewee reflected this in the following quote: "I do not believe in God and I never went to Church before Mt Pinatubo erupted but now I regularly attend the Sunday mass just to meet my former village mates". The church indeed allows the people of Bacolor, scattered in many resettlement sites, to meet once a week and maintain a collective existence as a single community. On the other hand, San Rafael and Santa Fe were founded during the first half of the 19th century by early Ilokano migrants from the Ilocos region in Northern Luzon (Apostol, 1956; de Jesus, 1990). After the eruption of Mt Pinatubo, some Ilokano victims from Zambales accepted to be relocated in the far away islands of Mindoro and Mindanao (Dueñas, 1992). On the other hand, the original village of Santa Fe was totally abandoned. In 1993, some of the victims came back to the area with the support of the Mount Pinatubo Commission but they settled on the foothills surrounding their former villages. The ability and willingness of the Ilokano people to move and establish pioneer settlements all over the Philippines has been widely acknowledged (e.g. Fonacier, 1953; McLennan, 1980). The resettlement of the Ilokano victims of the Mt Pinatubo lahars shows that, in comparison to the people of Bacolor, the lack of long-term rooting of the Santa Fe and San Rafael community to its territory served as a significant factor which favoured sustainable geographical relocation. The Ilokano ethnic history of pioneer movements further facilitated the uprooting and re-rooting of the victims.

One significant feature of the Kapampangan and Ilokano social systems directly relates to their ethnic histories and had a substantial impact on their adjustment to post-disaster resettlement. Aysan and Oliver stress that kin and lineage may have a strong influence on location and residence (1987). Among Kapampangans, attachment to the native place is rooted in vertical kin ties and pride in the ancestors. Family genealogies are

very important and often carefully accounted by elders or family leaders (Henson, 1963). The inhabitants of Bacolor particularly take pride in their famous ancestors who were involved, at the end of the 19th century, in the emergence of a very influential Kapampangan culture. The souvenir of the forefathers is maintained through many statues which have been consistently exhumed after each lahar onslaught (Gaillard, 2002). For the victims who were relocated, resettlement was thus often associated with an unacceptable uprooting from the birth and death place of the ancestors. Along with economic hardship in the relocation sites, the strong attachment of the resettlers to their native town explain why some of them choose to definitively go back to Bacolor. On the other hand, Ilokano migrants who settle in rural areas rather emphasize horizontal kin ties over vertical relationships (Perterra, 1988). Place attachment is not rooted in centuries of family genealogies and thus facilitated post-disaster uprooting as long as relatives of the same generations were kept together, which happened in most cases. Thus, none of the former territorial markers of Sta Fe have been kept or transferred to the new settlements on the flanks of the surrounding hills or towards the Balaybay resettlement site.

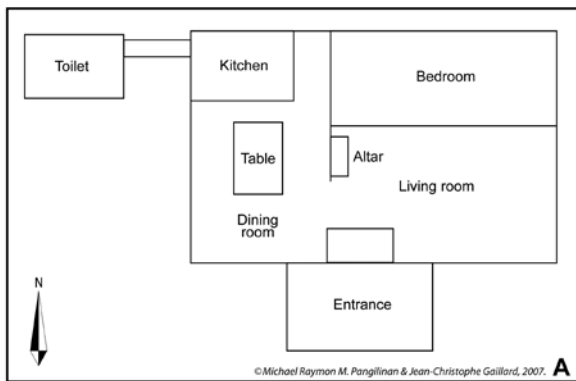
A popular image associated with Kapampangans by non-Kapampangans is that they are "boastful" and "spendthrifts" (Filipinas Foundation, 1975; Arceo, 1984). This belief is not new and often traces its origin to the rich and fertile central plain of Luzon where the Kapampangan people are gathered. In the 17th century, Friar Joaquin Martinez de Zuñiga mentioned that "the Pampangos (English for Kapampangan) enjoy fame from being courageous, but I do not find anywhere in their history anything that supports this belief". On the other hand, Ilokanos are often stereotyped as "frugal" or "thrifty" and simple in their way of life (Purisima, 1918; Aquino, 2000). This is often explained by the harsh environment and scarce resources of the Ilocos



Mount Mayon volcano in Albany province, Phillipines, in December 1999.

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Fig. 3 House designs.



A traditional Kapampangan and Ilokano house.



Resettlement House design.

region (Jocano, 1982). Inquiry into the Family Income and Expenditure Survey of 1988 shows that, before the eruption of Mt Pinatubo, Kapampangans indeed spent eighty per cent of their monthly incomes versus only sixty-nine per cent for the Ilokanos. A female interviewee in Balaybay explicitly linked the alleged opposing characters of both ethnic groups to their capacity to adjust to the resettlement site: "Ilokanos are hard-working and frugal people who were able to cope with geographical relocation and harsh economic environment. But Kapampangans have a hard time to adapt to the resettlement sites which do not satisfy their daily needs". Some Ilokano families actually gave up electricity and other amenities they formerly enjoyed in Santa Fe and San Rafael when they moved to the Cawag resettlement site in Subic.

Kapampangan and Ilokano material cultures differ too. Traditional houses are of particular importance in the adjustment of lahars victims to resettlement. In both Bulaon and Balaybay, the houses provided by the Mount Pinatubo Commission were built as cheaply as possible. They are small, follow a simple four-wall architecture and use substandard materials. Resettlement houses thus do not follow the design of traditional Kapampangan and Ilokano houses (see Figure 3 and Galang, 1940). Kapampangan houses usually distinguish by their large kitchen as cuisine is a major pride of the locals (Dizon, 1992). However, houses in the resettlement sites do not

have any kitchen but only a small sink at the back. The roofs made of simple metallic sheets which turn out to be very hot also differ from traditional palm-leaves roofs or modern sturdy roofs of Kapampangan and Ilokano houses (Hila et al., 1992).

Recommendations

The dissimilar responses of the Mt Pinatubo lahars victims relocated in Balaybay and Bulaon resettlement site lie in the unique history and culture of their ethnic group. The Ilokano of San Marcelino proved to be loosely tied to their native villages and overcame the social uprooting induced by their resettlement in Balaybay. On the other hand, the Kapampangan of Bacolor were strongly attached to their ancestral territory and struggled to adjust to the Bulaon relocation site. There are several unplanned implications of such differences in the adjustment to resettlement. Those include territorial conflicts between local governments (Gaillard, 2002), massive abandonment of the resettlement sites, scam regarding the occupancy of abandoned houses (Orejas, 1998) and inadequate or useless facilities. To avoid such impediments, it is fundamental to integrate those behavioural divergences in post-disaster resettlement planning. Indeed, if ethnic factors are often recognized, they are still rarely and fully included in disaster management policies. Integrating ethnic factors requires a fine understanding of the local context. The involvement of the victims in the decision-making process is also of critical importance and a prerequisite to fully understand the ethnic dimension of resettlement and to foster sustainable disaster recovery. In the case of the Mt Pinatubo disaster, the top-down and technocratic nature of the resettlement process which focused first on infrastructure and housing overlooked the intrinsic differences between lowland ethnic groups. Only the obvious specificities of the upland Aeta indigenous people were considered as worth a particular resettlement program, yet often considered as a failure (e.g. Seitz, 1998). It is of particular concern that following the 1993 eruption of Mt Mayon in Southern Luzon, the Philippine government similarly forced the relocation along the seashore of communities formerly living on the slopes of the volcano. These resettlers did not know how to fish or to swim (Cola, 1994). In summary, taking into account ethnic factors in post-disaster resettlement militates for a contextual approach of disaster management (e.g. Mitchell et al., 1989; Gaillard et al., 2008). What works in one place with one community should not be taken for granted and apply elsewhere without careful study of the victims' cultural, social, economic and political fabric.

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References

- Anderson, M.B., 1993, "Lessons in Rehabilitation / Resettlement Efforts: Implications for Mt. Pinatubo Assistance Programs. *Philippine Journal of Public Administration* 37(4): 351-374.
- Apostol, J.P., 1956, "The Ilocanos in Zambales", *Journal of the Philippine National Historical Society* 4(2): 3-15.
- Arceo, E.J., 1984, *The Macho Concept Among the Capampañgans*. E.D. dissertation, Centro Escolar University, Manila.
- Aysan, Y., Oliver, P., 1987, *Housing and Culture after Earthquakes*, Oxford Polytechnic Press, Oxford.
- Banzon-Bautista, C., 1996, "The Mount Pinatubo Disaster and the People of Central Luzon", in C.G. Newhall and R.S. Punongbayan (eds.), *Fire and Mud: Eruptions and Lahars of Mt Pinatubo*, Philippines, University of Washington Press / Philippine Institute of Volcanology and Seismology, Seattle / Quezon City, pp. 151-161.
- Boen, T., Susanto, M., Disah, I., Hendarto, 2001, "Post Earthquake Disaster Relocation: Indonesia's Experience", in *APEC Workshop on Dissemination of Disaster Mitigation Technologies for Humanistic Concerns Phase I: Earthquake Disaster*, Taipei, Taiwan, 18-21 June 2001, pp. 22.1-22.15.
- Bolin, R., 1986, "Disaster Impact and Recovery: A Comparison of Black and White Victims", *International Journal of Mass Emergencies and Disasters* 4(1): 35-50.
- Bolin, R., 2006, "Race, Class, Ethnicity and Disaster Vulnerability", in H. Rodriguez, E.L. Quarantelli and R.R. Dynes (eds), *Handbook of Disaster Research*, Springer, New York, pp. 113-129.
- Bowden, M.J., Pijawka, D., Roboff, G.S., Gelman, K.J., Amaral, D., 1977, "Reestablishing Homes and Jobs: Cities", in E.J. Haas, R.W. Kates and M.J. Bowden (eds), *Reconstruction Following Disaster*, MIT Press, Cambridge, pp. 69-145.
- Cernea, M., 1997, "The Risks and Reconstruction Model for Resettling Displaced Population", *World Development* 25(10): 1569-1587.
- Cola, R.M., 1994, "Managing Interactive Hazards: Institutional Risk-Reduction Measures in the Mayon Area", in *Proceedings of the National Conference in Natural Disaster Mitigation*, 19-21 October 1994, Quezon City, Philippines, pp. 285-304.
- Crittenden, K.S., 1997, "Evacuation, Resettlement, and Rehabilitation Strategies among Kapampangans facing Recurrent Risk of Lahar Flow", in *Papers and Proceedings of the International Symposium on Disaster Health*, IPPAO, Manila, pp. 425-434.
- Crittenden, K.S., 2001, "Can this Town Survive? Case Study of a Buried Philippine Town", *Natural Hazards Review* 2(2): 72-79.
- Davis, I., 1977, "Emergency Shelter", *Disasters* 1(1): 23-40.
- Davis, I., 1978, *Shelter after Disaster*, Oxford Polytechnic Press, Oxford.
- De Jesus, R.V., 1990, *Zambales, Union Zambaleña, Makati*.
- Department of Social Welfare and Development Region III, 1999, *Mount Pinatubo Statistics*, Department of Social Welfare and Development Region III, San Fernando.
- Dizon, L.L., 1992, *A Survey of Kapampangan Folklore: The Folklore of Tarlac Province*, Center for Tarlaqueño Studies, Tarlac State University.
- Dueñas, M., 1992, "Yes There's Life after Mt. Pinatubo: Volcano Victims Resettled in Mindoro", *Philippine Free Press* 14 March:14, 46.
- Filipinas Foundation, 1975, *Philippine Majority-Minority Relations and Ethnic Attitudes*, Filipinas Foundation, Makati City.
- Fonacier, T.S., 1953, "The Ilokano Movement: A New Frontier in Philippine History", *The Diliman Review* 1: 89-94.
- Gaillard, J.-C., 2002, "Implications Territoriales et Ethno-Culturelles d'une Crise Volcanique: Le Cas de l'Eruption du Mont Pinatubo aux Philippines", *Annales de Géographie* 627-628: 574-591.
- Gaillard, J.-C., Clavé, E., Vibert, O., Azhari, Dedi, Denain, J.-C., Efendi, Y., Grancher, D., Liamzon, C.C., Sari, D.S.R., Setiawan, R., 2008, "Ethnic Groups' Response to the 26 December 2004 Earthquake and Tsunami in Aceh, Indonesia", *Natural Hazards: in press*.
- Galang, R.E., 1940, *Ethnographic Study of the Pampangans*, Department of Agriculture and Commerce – Natural History Museum Division, Manila.
- Girard, C., Peacock, W.G., 1997, "Ethnicity and Segregation: Post-Hurricane Relocation", in W.G. Peacock, B.H. Morrow and H. Gladwin (eds), *Hurricane*

- Andrew: *Ethnicity, Gender, and the Sociology of Disaster*, Routledge, London, pp. 191-205.
- Henson, M.A., 1963, *The Province of Pampanga and its Towns A.D. 1300-1963*, M.A. Henson, Angeles City.
- Hila, M.C.A., Perez, R.D., Dacanay Jr., J.E., 1992, *Balai Vernacular: Images of the Filipino's Private Space*, Cultural Center of the Philippines, Manila.
- Jocano, F.L., 1982, *The Ilokanos: An Ethnography of Family and Community Life in the Ilocos Region*, University of the Philippines - Asian Center, Quezon City.
- Lacsamana, R., Crittenden, K.C., 1997, *Updated Masterlist of Current Residents: Bgys Cabambangan, San Vicente, Sta. Ines and Cabetican, Bacolor, Pampanga*, Unpublished Report, Municipality of Bacolor, Bacolor.
- Lamug, C.B., Crittenden, K.S., Nelson, G.L.M., 1999, "Place Identity of Women of Bacolor", *Philippine Sociological Review* 47: 21-30.
- Larkin, J.L., 1993, *The Pampangans: Colonial Society in a Philippine Province*, New Day Publishers, Quezon City.
- Leone, E., Gaillard, J.-C., 1999, "Analysis of the Institutional and Social Responses to the Eruption and the Lahars of Mount Pinatubo Volcano from 1991 to 1998 (Central Luzon, Philippines)", *Geojournal* 49(2): 223-238.
- Macatol, I.C., Reser, J., 1999-2000, "A Reconsideration of the Nature and Role of Resettlement Housing and Housing Materials in Natural Disaster Recovery in Indigenous Communities", *Australian Journal of Emergency Management* 14(4): 33-41.
- McLennan, M.S., 1980, *The Central Plain of Luzon: Land and Society in the Inland Frontier*, Almar-Phoenix Publishing House, Quezon City.
- Mitchell, J.K., Devine, N., Jagger, K., 1989, "A Contextual Model of Natural Hazard", *The Geographical Review* 79(4): 391-409.
- Mount Pinatubo Commission, 1994, *Integrated Plan for the Mount Pinatubo Affected Areas*, Mount Pinatubo Commission, Clark Field.
- Mount Pinatubo Commission, 1995, *The Madapdap Resettlement Center - Stage I*, Mount Pinatubo Commission, Clark Field.
- Mount Pinatubo Commission, 1999, *MPC Annual Report 1998: Change in the Land of the Volcano*, Mount Pinatubo Commission, Clark Field.
- Nelson, G.L., 1997, "Resettlers in Pampanga: Are they Finally Settled?", in *Papers and Proceedings of the International Symposium on Disaster Health*, IPPAO, Manila, pp. 295-314.
- Oliver-Smith, A., 1991, "Successes and Failures in Post-Disaster Resettlement", *Disasters* 15(1): 12-23.
- Oliver-Smith, A., 1994, "Reconstrucción Después del Desastre: Una Visión General de Secuelas y Problemas", in A. Lavell (ed.), *Al Norte del Rio Grande - Ciencias Sociales, Desastres: Una Perspectiva Norteamericana*, La Red, Lima, pp. 25-40.
- Orejas, T., 1998, "Resettlement Scam: Lahar Victims Abandon Houses", *Philippine Daily Inquirer* 4 June.
- Orejas, T., 2000, "Lahar Town Residents Resist Census", *Philippine Daily Inquirer* 14 May: 16.
- Pertierra, R., 1988, *Religion, Politics, and Rationality in a Philippine Community*, Ateneo de Manila University Press, Quezon City.
- Perry, R.W., Mushkatel, A.H., 1986, *Minority Citizens in Disasters*, The University of Georgia Press, Athens.
- Quarantelli, E.L., 1984, "Social Problems of Adjustment and Relocation: Some Questions and some Comments", in *Proceedings of the International Conference on Disaster Mitigation Program Implementation*, Ocho Rios, Jamaica, 12-16 November 1984, pp. 84-90.
- Scudder, T., Colson, E., 1982, "From Welfare to Development: A Conceptual Framework for the Analysis of Dislocated People", in E. Hansen and A. Oliver-Smith (eds.), *Involuntary Migration and Resettlement: The Problems and Responses of Dislocated People*, Westview Press, Boulder, pp. 267-287.
- Seitz, S., 1998, "Coping Strategies in an Ethnic Minority Group: The Aetas of Mt Pinatubo", *Disasters* 22(1): 76-90.
- Umbal, J.V., 1997, "Five Years of Lahars at Pinatubo Volcano: Declining but Still Potentially Lethal Hazards", *Journal of the Geological Society of the Philippines* 52(1): 1-19.
- Wisner, B., Blaikie, P., Cannon, T., Davis, I., 2004, *At Risk: Natural Hazards, People's Vulnerability, and Disasters*, Routledge, London.

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