

philippine studies: historical and ethnographic viewpoints

Ateneo de Manila University • Loyola Heights, Quezon City • 1108 Philippines

Typhoon Ondoy and the Translation of Disaster Expertise in Barangay Banaba, Marikina Valley

Loh Kah Seng

Philippine Studies: Historical and Ethnographic Viewpoints
vol. 62 no. 2 (2014): 205–31

Copyright © Ateneo de Manila University

Philippine Studies: Historical and Ethnographic Viewpoints is published by the Ateneo de Manila University. Contents may not be copied or sent via email or other means to multiple sites and posted to a listserv without the copyright holder's written permission. Users may download and print articles for individual, noncommercial use only. However, unless prior permission has been obtained, you may not download an entire issue of a journal, or download multiple copies of articles.

Please contact the publisher for any further use of this work at philstudies.soss@ateneo.edu.

<http://www.philippinestudies.net>

Typhoon Ondoy and the Translation of Disaster Expertise in Barangay Banaba, Marikina Valley

This article investigates community-based disaster responses among informal settlers in a barangay located just outside Metro Manila in the aftermath of Typhoon Ondoy (international code name Ketsana) in 2009. People have embraced some technical measures, such as forcible evacuation, but others have continued customary practices, such as seeking refuge on rooftops where they could get trapped during floods. An important factor in this process has been the credible work of a local people's organization, which has mediated technical expertise from outside the community. Adaptation of disaster expertise is an ongoing and unpredictable process, shaped by people's lived experiences and the wider political, economic, and social context.

KEYWORDS: PHILIPPINES • INFORMAL SETTLERS • DISASTER EXPERTISE • NATURAL HAZARDS • NGOS

Community-based disaster expertise emerged as a corrective to technical solutions in the 1980s. Whereas technical solutions adopt a top-down approach based on applied science, community-based responses emphasize the need to work with and through communities. In the Philippines, community-based disaster response began in 1984 with the formation of the Citizens' Disaster Response Center, whose work considered people as participants and decision makers rather than as mere victims of disasters (Bankoff 2012).

This article investigates how informal settlers in Barangay Banaba have translated community-based disaster expertise. The term "translation" is used here as a metaphor for the nonlinear ways in which global ideas travel and are received in specific contexts (Czarniawska and Sevón 2005). In the case of Banaba, community-based disaster expertise has neither been embraced nor rejected completely by the people who are meant to benefit from it. Instead, exhortations to plan ahead of disasters have had to accommodate local responses. In Banaba disaster expertise has been generally well received, partly because a local organization has been responsible for disseminating expert ideas, and partly because the scale of Typhoon Ondoy in 2009 appears to have underlined the need for modern measures. At the same time, locals have not discarded customary ways of dealing with floods, but have selectively adapted disaster expertise to their worldviews and needs. The translation of disaster expertise in Banaba has been an ongoing, partial, and at times unpredictable process, shaped by the lived experiences of people as well as the wider political, economic, and social context.

In disaster studies, community-based disaster expertise has gained considerable support at least in theory if not always in action. It intersects with the concept of "social capital," which are those "features of social organization such as trust, norms and networks that improve the efficiency of a community or even a society at large to engage in coordinated endeavours" (Bankoff 2007, 328). That disaster expertise should draw upon community networks is reinforced in contemporary social science interventions, which contend that even low-income groups may reduce their vulnerability to disasters if they possess social capital and effective coping strategies (Blaikie et al. 1994; Pelling 2003). In its scathing review of the work of international NGOs after the 2004 Indian Ocean tsunami in Southeast and South Asia, the Tsunami Evaluation Coalition has taken the NGOs to task for ignoring

local resources and creating a second, man-made tsunami upon the original one (Cosgrave 2007).

Although it is a useful corrective to technical responses, community-based disaster work is a sophisticated body of expertise, with ideas and prescriptions that are often fluid and contested. Community-based approaches employ applied-science thinking about disasters—more accurately, they combine technical and customary solutions. In other words, community-based expertise includes both scientific measures, which can be applied to all contexts, and specific responses that are drawn from the concrete experiences of communities. As the scope of disaster expertise expanded in the mid-1990s, from preparedness to risk reduction and management, community-based approaches have also generally adopted this expanding framework (Wisner et al. 2011). Not surprisingly, community-based approaches share some of the same shortcomings attributed to technical methods. They sometimes overstate the unity and capacity of communities, ignoring the existence of interior lines of exclusion and marginalization according to gender, social class, and physical ability. In the Philippine context, Erhard Berner (1997) finds informal communities to be fractured; local associations are often unable to mobilize and represent the poorest households, particularly renters who reside in fringe areas of a settlement. Some critics even suggest that participatory approaches to development are patently authoritarian in imposing external measures upon communities (Cooke and Kothari 2001).

In combining technical and customary solutions, as this article discusses, community-based expertise raises a question about its role in changing communities. While experts often subscribe to a view of communities as unchanging, in fact they can be seen as complex, variable entities that may change before, during, and after a disaster. Disasters as historic events and community-based expertise as a mode of social mobilization both have the capacity to transform people. Historically disasters have precipitated great changes in people's lives, both directly through the physical destruction and indirectly through the efforts of states and experts to build new communities and societies in the aftermath (Erikson 1976; Loh 2013; Smart 2006; Clancey 2006). To extend disaster studies beyond its focus on causes and risks to the effects of disasters and disaster expertise, this article considers the impact of Typhoon Ondoy (international code name Ketsana) in 2009 on several flood-prone informal settlements in Barangay Banaba, municipality of San

Mateo, in the province of Rizal, where I interviewed over forty residents three years after the event.

A Pluralistic Expertise

Disaster expertise that incorporates technical measures may be said to be modernist. By modernist, I refer to the optimism, based on scientific rationality, that the future is not preordained but capable of improvement; natural hazards can thus be anticipated, overcome, and mitigated through human endeavor. A modernist response is distinguished, for instance, from a religious worldview that life is preordained by divine forces, or from customary practice in which common people accept hazards as natural and beyond their means to control (Bankoff and Hilhorst 2009). Modernist responses exist in both community-based and technical disaster expertise; tellingly, both approaches share a set of jargon that includes terms such as “risk,” “vulnerability,” “mitigation,” and “trauma.”

However, the balance between the technical and customary in community-based expertise is not always equal. Katrina Allen’s (2006) insightful study of community-based work in the Philippines reveals a tendency among project managers to disempower communities. They do so either by focusing on physical hazards instead of people’s lived experience or by sidelining local stories with metanarratives drawn from technical experts. These problems point not only to individual failings but also to power imbalances, still common in some community-based work, between the different parties rendering and receiving assistance. A common example in rural Vietnam of technical measures in community-based efforts is the combined use of GIS (geographic information systems) technology and local knowledge to draw up flood hazard maps (Tran et al. 2009). It is important to note that, although the villagers contribute their intimate knowledge to the project, their role is circumscribed by the technology of the hazard map, which neatly divides the community into zones of safety and danger and contains a prescribed set of responses applicable worldwide, such as evacuation from floodwaters.

Admittedly the technical can assume an overriding role in community-based expertise; but exactly what constitutes custom is unsettled. Is social capital based solely on custom, or can it include technical measures? Bankoff’s (2007) historical survey of social capital in the Philippines encompasses a diverse group of formal and informal associations, ranging from village-based

self-help (called *bayanihan*) to religious networks, and NGOs and people’s organizations that emerged in the martial law period under Ferdinand Marcos; given this diversity, social capital can plausibly comprise customary, religious, and technical practices. In his study of the San Isidro flood of 1887, Bankoff (2012) projects the concept of disaster risk reduction backward into history, where the community’s response drew upon modernist resources provided by the Manila Observatory and access to telegraph service. On the role of social capital in Japan’s earthquakes in 1923 and 1995, Daniel Aldrich (2011, 2012) notes that affected areas that recovered well had active citizens’ groups to articulate the community’s interests. His approach frames social capital as responses from below, responses which are not necessarily customary; indeed, the actions the locals undertook may have been the technical solutions the state should have provided but did not.

Nevertheless, Bankoff (2003b, 158–62) has also written about customary responses, which he calls “cultures of disaster,” as existing outside the modernist paradigm. These responses, he observes, have been derived historically from lived experiences (rather than Western historical frameworks), from which Filipinos view disasters as a way of life rather than as an abnormality to be excised. In this sense, cultures of disaster can consist of organic, even traditional, practices such as the popular perception of disasters as divine events and the seeming fatalism that disasters are unavoidable, which Bankoff (*ibid.*, 166–78) suggests are a coping mechanism of risk taking. Beyond the sphere of attitudes, cultures of disaster also include the use of light materials in building houses and resettling away from hazardous areas (*ibid.*, 163–66). In his study of migration patterns in Aceh following the 2004 Indian Ocean tsunami, Saiful Mahdi (2012) finds social capital implicated in the action of displaced survivors who moved to fellow members of their community (*gampong*) living in other parts of the province who could assist them. The migratory movements were not arbitrary but shaped by customary ties, and often bypassed the official relief camps set up by aid agencies (*ibid.*).

Social capital, then, is pluralistic; communities can choose pragmatically from either technical or customary solutions, or a combination of both. For low-income groups such as informal settlers, distinctions between technical and customary are not frequently useful, and disaster expertise is merely one among various ways to respond to hazards. People may reject one option in favor of another primarily because of their circumstances and interests, rather than the force of neat categories. For instance, a technical response

like evacuation may become accepted by a community, with members organizing themselves to prepare for and carry out an evacuation. Over time the role of community organizers diminishes, and evacuation loses its technical character as it becomes part of the community's culture of disaster. What is technical or customary in disaster work is thus fluid and subject to change at the local level.

Banaba: Development and Hazard

Like other informal settlers in the Philippines, those in Banaba have eked out an existence at the margins of the state and the capitalist economy. Banaba is a small, low-lying, and fast-growing barangay 1.382 square kilometers in size, located in San Mateo, Province of Rizal, on the eastern flank of Quezon City in Metro Manila. The barangay is home to several densely populated informal settlements, including North and South Libis, Banaba Extension, and Riverside. The 2010 census counted about 21,000 people residing in Banaba (NSO 2012),¹ including over 2,200 families of informal settlers (Abinales 2012a) (fig. 1).

I have found few local records on Banaba, but provincial sources show that its demographic history has been a microcosm of the rapid urbanization

of Rizal province, and of Metro Manila in general, since the 1970s. In 1970, buoyed by the economic growth of the metropolitan area, Rizal was already the most densely populated province in the Philippines. Rizal's population had grown at more than twice the national rate in the preceding decade.² This growth was due to the migration of workers seeking employment in various industries established in Rizal, such as shoe making, metal production, chemical manufacturing, food processing, and textiles (NCSO 1970). By 1986 the population of Barangay Ampid, which then included Banaba, had grown so large that the latter was made a separate barangay. Between 1990 and 2007, Banaba's population increased nearly threefold from 7,554 to 21,000 (Municipality of San Mateo 2011).

Given its geographical location, Banaba's residents are tied economically to the metropolitan area, particularly Quezon City to the west and Marikina City to the south. Banaba is the first barangay one encounters on leaving Quezon City after crossing the Batasan–San Mateo Bridge. Several people I spoke to have lived in Banaba since the 1970s, when the local economy was still largely agricultural. But the vast majority of current residents, hailing from Marikina City and provinces such as those in the Bicol region, Mindanao, and Visayas, arrived in Banaba in the 1990s and 2000s in search of affordable housing. Economically active adults worked in the low-wage informal economy of Quezon City and Marikina City, as construction and factory workers; taxi, jeepney, and tricycle drivers; welders; laundrywomen; and seamstresses. Many families also reared livestock or grew vegetables to defray living costs. Many of the recent migrants had arrived in Banaba on chains of migration, following family members and relatives who had settled earlier in the area.

Most of the informal settlers at present are poor. One estimate suggests that 60 to 70 percent of households in Banaba belong to the urban poor (Sulit 2012). In Metro Manila half of the urban poor live on monthly incomes of P5,000, an amount that is far below the poverty line of P18,000, while a tenth have no income at all (ADB and HUDCC 2002). In South Libis, 20 percent of the 400-plus families are renters who pay monthly rents of between P1,000 and P1,500; these families cannot afford the rental fees of about P3,000 for a similar accommodation in Marikina City (Jacinto 2012). Some families have entered into agreements with the government and landowners to build a dwelling on undeveloped land, but they do not possess legal titles and may be evicted at any time. There are numerous rumors of possible eviction,



Fig. 1. Informal housing in Banaba along the Nangka River, 2012.



Fig. 2. Map of Barangay Banaba and vicinity. Sources: Project NOAA <http://noah.dost.gov.ph>, Zoleta-Nantes et al. 2011.

although the mayor has denied these rumors and reportedly said that residents may remain for as long as they wanted (Ramos 2012). Homeowners and neighborhood associations help many informal settlers to negotiate the purchase of house lots from landowners, and some families have acquired legal titles. However, the frequent floods in Banaba have set back this process and deterred government officials from sanctioning settlement in a flood-prone area (Hernandez 2012; Caybot 2012).

The political economy of urbanization pushes low-income migrants to live in hazardous areas. Banaba is situated in the Marikina Valley, which is part of a semi-alluvial floodplain that extends westward through the metropolitan area to Manila Bay. The San Mateo–Marikina River flows on the western flank of Banaba, where the settlements of North and South Libis are located (Municipality of San Mateo 2011). South Libis faces an accentuated hazard as it stands at the intersection of the Marikina River and its tributary, the Nangka River, at an almost 45-degree angle (Abinales 2003). The Nangka River, running along the southern side of Banaba, passes two other settlements, Banaba Extension and Riverside (fig. 2). In particular, the river meanders sharply along three sides of the pear-shaped Banaba Extension; there are fears that it may cut through the northern tip and turn the settlement into an island without road access (Abinales 2012b).

The Flood Risk in Banaba

The vulnerability of Banaba is not due to geographical or climatic factors alone. Human activity has clearly exacerbated the problem. To some extent informal settlers have contributed to the floods, by encroaching upon riverbanks to construct poorly built houses, discarding garbage into the waters, and generally obstructing waterways (Lagmay and Arcilla n.d.). More important sources of vulnerability, however, are the economic and political forces at work in Banaba, which mirror developments in the metropolitan area.³ Since the 1980s, urban and economic development, such as quarrying work both in Banaba and upstream in the Sierra Madre mountains to the east, have reduced land cover, while more settlers and increased industrial production by factories and piggeries have caused the rivers to be clogged up by mud, garbage, and debris.⁴ Philippine politics, too, have largely failed to improve the livelihood of informal settlers, who have often suffered eviction drives by the state.⁵

Beyond the crushing effect of structural factors, however, the movements of informal settlers express the agency and optimism of Filipino individuals

and families, in the process creating networks of people, goods, and money (Trager 1988). Informal settlers in the Philippines are similar to their counterparts elsewhere in Southeast Asia; they are modern in outlook but they also bring rural community ties to the city (Jellinek 1991; Guinness 2009; Loh 2013). In moving to Banaba, my interviewees were driven by the search for housing and the desire for material improvement for themselves and their children. However, their sense of opportunity has been tempered by a resignation to living in hazardous areas. They have made a pragmatic calculation to reside in cheap, basic housing that is close to their workplace, relatives, and friends. But migrants are aware of the flood hazard. Of her move from Laguna province, south of Rizal, to Banaba Extension in 1998, Bing Basco (2012), a seamstress, surmises, *kung meron lang* (“if only there was a choice”) of a place for her to go. Linda Leolanda (2012) of Riverside, who has resided in the settlement for forty years, admits that living alongside Nangka River has been “very dangerous.” Leolanda’s neighbor, Antonio Javier (2012), who moved to Riverside in 2007, shares the common understanding that their housing lacks solidity. Riverside is “a danger zone,” he admits, and “there is a time when the flood will come.”

Typhoon Ondoy and Buklod Tao

Typhoon Ondoy made landfall in the Philippines at about eleven o’clock in the morning of 26 September 2009 and dumped 450 millimeters of rain (or more than a month’s worth of rain) within twelve hours—the highest volume of rainfall in the country since the 1960s (PAGASA 2009). This was unlike the ordinary floods that had frequently inundated streets and low-lying neighborhoods in Metro Manila: Ondoy brought floodwaters ranging from waist- to two-storey-high levels, which brought the capital to a standstill. Many cities and municipalities in the metropolitan area and Rizal province were submerged, including 239 barangays in Metro Manila. In Banaba the Marikina and Nangka rivers overflowed their banks, raising floodwaters to a depth of 9 meters (Zoleta-Nantes et al. 2012). The floods killed 464 persons in the Philippines, while another 529 were injured and 37 reported missing. The typhoon affected 4.9 million people, destroyed 185,000 houses, and dealt damages estimated at P11 billion (NDCC 2009).

Ondoy was not only a calamity but also a catalyst for change. A subsequent study found that both barangay-led and community-based disaster expertise had not been practiced in many parts of Metro Manila

and Luzon prior to Ondoy; the victims of Ondoy and Typhoon Pepeng (international code name Parma), which occurred in October that year, did not receive adequate livelihood assistance (IPC 2011). However, the floods compelled some concrete responses. In San Mateo, the Planning and Development Office worked with the Disaster Risk Reduction and Management Council to prepare and implement disaster response programs. Municipal agencies made efforts to reforest mountainous areas in San Mateo and improve the drainage system as part of the post-Ondoy revision of the Comprehensive Land Use Plan (Municipality of San Mateo 2011). International NGOs such as Christian Aid collaborated with local NGOs and people’s organizations to carry out community-based programs, which sought to reduce the vulnerability of the urban poor to floods and create sustainable livelihoods (Karaos 2012).

Typhoon Ondoy also contributed to in-migration to the informal settlements and brought about change at the local level. With the destruction of their homes elsewhere, about a thousand informal settlers moved into Banaba to build new housing (Abinales 2012). This disaster-induced migration has affected the social and cultural landscape of Banaba. Established residents reveal that they have yet to form close relations with the new arrivals (Jacinto 2012; R. Carvajal 2012). A separate study has found new tensions arising from within urban communities after Ondoy, with newly arrived settlers often blamed for law and order problems (IPC 2011). The problem of law and order may be a temporary one, but it suggests that informal communities are constantly in flux.

A key to understanding the disaster responses in Banaba is the community-based work of Buklod Tao (“people bonding together”), a people’s organization that has been active in Banaba even before Ondoy struck, helping informal settlers deal with environmental problems for nearly two decades. It was formed in 1996 to mobilize the residents of North and South Libis against a construction company, which had built a cement batching plant on a hectare of land used by residents to plant vegetables (Abinales 2003). That no one was killed when Ondoy hit the barangay is credited by the president of Buklod Tao, Manuel Abinales, to the efforts of its members (Burgonio 2012).⁶

Abinales (2003) has written a paper on flood prevention with the subtitle “God and Preparedness are our Protection.” This combination of religious and technical terminology shows the eclectic nature of Buklod

Tao's legitimacy and work. Abinales, an animator, has grafted the optimism of disaster preparedness onto the original religious mandate of Buklod Tao (ibid.). The term "buklod" refers to small cells of ten to twelve persons. The cells, which predate Buklod Tao's founding, meet for weekly prayer and liturgical discussion. In 1995 Abinales adapted the cell system to organize informal settlers, especially women, to tackle environmental problems. As Abinales (ibid., 159) admits, this innovation was met with considerable initial resistance from the "majority of buklod members." It took two years before the program became acceptable. The decisive breakthrough was Buklod Tao's successful mobilization of the community against the construction company, which in Abinales's (2012b) words entailed "a new level of liberation." Even as Buklod Tao moved toward disaster programs, Catholic precepts have remained important in its work.

The real test of Buklod Tao's disaster program, according to Abinales, came on the night of 18 August 1997 with the arrival of Typhoon Ibiang (international code name Winnie), which caused the waters of the Marikina River to rise to 25 meters, 7 meters above the safety level. In these difficult circumstances, Buklod Tao was able to put its ideas into practice and ensure that no one in Banaba was killed. With its disaster expertise apparently vindicated, Buklod Tao has been able to expand its work to Banaba Extension and other informal communities in Banaba and beyond (Abinales 2003). Presently, Buklod Tao has 756 members, among whom more than two thirds are female.

Religious underpinnings aside, Buklod Tao has undertaken a mostly modernist response to floods based on technical expertise and local resources. Prior to Typhoon Ibiang, Abinales (2012b) observes, it was the case of each household for itself, and everyone was "just waiting for disaster to come." In this context Buklod Tao's work has been to "manage the risk, not the crisis." This approach is strongly indicative of applied science thinking. Buklod Tao has received technical expertise on disasters in meetings and discussions with state agencies and domestic NGOs, the Department of Social Welfare and Development, and the Citizens' Disaster Response Center (Abinales 2003).⁷ Consequently, prior to Ondoy, Buklod Tao was able to utilize the knowledge and resources of informal settlers to draw up a hazard map of Banaba; install a basic early warning system in Libis (using water level markings under the Batasan–San Mateo Bridge); organize search and rescue teams; and prepare the transfer of residents to official evacuation centers in



Fig. 3. Abinales (right) explains the Banaba flood map to author, 2012. Photo courtesy of Buklod Tao.

Banaba. It also worked with the Center for Disaster Preparedness to build rip-rap structures and Gabion Box walling, as well as plant bamboo trees to prevent soil erosion along the riverbanks (Zoleta-Nantes et al. 2012; Burgonio 2012).⁸ In 2011 Buklod Tao became an accredited partner of the barangay's work on disasters, and both parties collaborated when floods affected Banaba later that year (Abinales 2012a) (fig. 3). In line with contemporary expertise, Buklod Tao has dealt not only with floods but also with livelihood issues: it has initiated a number of social enterprises to enable residents to work and set up businesses (Zoleta-Nantes et al. 2012).

Informal Settlers and the Translation of Expertise

Banaba's informal settlers have neither adopted nor rejected wholesale Buklod Tao's disaster expertise; rather, they have translated this expertise given their experiences and the possibilities and limits defined by the social context. In doing so, they have acted like other informal settlers in the Philippines who have had a long history of adapting to challenges, including hazards, in their physical and social environments (Jocano 1975; Bankoff 2003; Antolihao 2004). As Michael Pinches (1994) has observed,

in building informal housing and establishing reciprocal relationships within the community, settlers actively respond to “forces of exclusion and danger.” In the aftermath of Ondoy, Banaba’s informal settlers have adapted Buklod Tao’s community-based disaster expertise in specific ways, in the process changing their cultures of disaster as well as their relationship to the environment. This change has been more evident among informal settlers who are members of Buklod Tao than those who are not.

Events are an important trigger to adaptation. My interviewees distinguish between the “normal” floods they have tolerated in the past and the flood associated with Ondoy, which they have come to realize is exceptional. Armando Esben (2012), resident of Banaba Extension since 1995 and a member of Buklod Tao, thinks that Ondoy is the “biggest flood” of all previous floods of a similar scale he has experienced. Romeo and Lourdes Tauza, who have lived in the Extension since 1990, feel that the severity of the flood caused by Ondoy exceeds that of the flood generated by Typhoon Ibiang in 1997, when floodwaters did not reach their house (Tauza et al. 2012). These subjective notions of danger are tied to personal experiences but also receive concurrence from disaster experts who consider Ondoy an extreme event.

Etched in the memory of many people is the shock of witnessing the speed and height of rising floodwaters on 26 September 2009, seeing the damage done to their houses, losing their belongings, having a close shave with death, and fleeing in panic to safer ground with only the clothes on their back. At the Riverside settlement, the Leolanda family says they were “very surprised” at the fast rising water level, forcing them to leave their house through a window with all their belongings left behind (Leolanda 2012). Francia Encinas (2012), an executive committee member of Buklod Tao and resident of South Libis, remembers returning after the floodwaters had subsided to find her house covered in mud and all her belongings gone, as a result of which her family had no change of clothes, including underwear, for three days. In Banaba Extension, Mila de Belen (2012), a board director of Buklod Tao, recalls telling herself that she was “back to zero” in the immediate aftermath of Ondoy, with her house covered in mud and her belongings either lost or badly damaged.

Lyn Ramos from South Libis is another executive committee member of Buklod Tao and former president of the local neighborhood association. Although she has lived in the area for fifteen years and experienced

numerous floods, she says it is Ondoy that has left an indelible impression: within a short span of fifteen minutes, floodwaters rose from the ground level to the second floor of her two-storey house. Together with her baby boy, Lyn’s family sought refuge on their rooftop. But the house soon collapsed, forcing them to move from one rooftop to another until they reached safety atop a three-storey building, where they remained for twenty-four hours. As Lyn Ramos (2012) explains, “Flooding is regular for [them],” but Ondoy has demonstrated the need for her to prepack their belongings and leave quickly for a safe place (fig. 4). Like many residents, she realizes that the rooftop is no longer a safe refuge from rising waters.

The experiences of many informal settlers have spurred them to reevaluate their cultures of disaster and their views of disaster expertise, such as in choosing between retreating to the rooftop or evacuating to a safe place. “Going roof” is part of people’s cultures of disaster as a way of safeguarding



Fig. 4. Resident with belongings packed for the possibility of a flood, 2012.

their possessions from looters, making them reluctant to leave their homes. As Antonio Javier (2012) of Riverside explains, “the flood is only a short time” and people can wait out and outlast any flood, or else remain inside the house to look after their things. During Ondoy one man remained inside his house to safeguard his belongings, due to the fear that “bad people” who come in small boats pretend to be rescuers but are actually looters (Ramos 2012). In the view of informal settlers, the real disaster is not the flood but the loss of personal belongings.

The alternative to “going roof” is evacuation, which is not simply the act of fleeing from a disaster area—which people frequently do of their own accord—but the technical measure, marked by its universal and mandatory character, that everyone must leave the danger zone. Buklod Tao follows this accepted measure. They admonish people that, during a flood, they should not get up on the roof of their houses, where they can get trapped; rather, they must evacuate quickly to higher ground, leaving their belongings behind if need be (Abinales 2012b). During Ondoy some people tried to remain in their homes and had to be removed forcibly by rescuers (*ibid.*; Hernandez 2012). Here is a clash between technical and customary responses to a disaster: the former focuses narrowly on one’s safety during the flood, while the latter takes into account competing needs for people to survive after the crisis. Both responses are rational when seen within their respective worldviews.

Disaster expertise replaces customary responses only in an uneven way. The growing acceptance of evacuation after Ondoy is likely to be partial as long as disaster expertise is not reconciled with other practical considerations. As community organizers and residents have attested, the tendency to flee to the roof remains. In the short term people are likely to evolve a mixture of customary and technical measures, although the balance of this combination is fluid. Gaspar Ortega (2012), who moved to Banaba Extension in 2005, agrees that “every time there is rain, you must prepare for another Ondoy,” which means to be ready to move quickly to a safe place elsewhere. He refers to his area as “like a basin,” showing an understanding of the geographical dimension of risk. However, he also maintains that, “if there is not too much rain, you can stay up [on the roof]”; after all, “floods can’t stay forever” (*ibid.*). Because of Ondoy, his family has added a second level to their house, which has been another common response in Banaba (*ibid.*). Others have packed their clothes and personal papers in plastic bags in anticipation of another great flood. These responses need not be classified

as either technical or customary because, more important than categorizing responses, is the greater awareness of the flood hazard.

Another change involves the way informal settlers, especially children and teenagers, frame the psychological impact of Ondoy. Rechiel Mandigma has been a member of Buklod ng Kabataan, the youth wing of Buklod Tao, even prior to the arrival of Ondoy. Her mother, a member of Buklod Tao, is a community organizer and rescue leader in South Libis. Rechiel Mandigma (2012) considers Ondoy a “very traumatic” experience, saying it was the “first time I experienced the flood”—even if she has experienced other floods previously. For her Ondoy is akin to being “the end of the world.” Rechiel recalls the confusion in the rescue efforts of Buklod Tao as well as the trauma that she and her family suffered. “My brother and sisters had trauma on that day,” she says, and her family members still cry when they remember Ondoy (*ibid.*). The use of the English term “trauma” to frame her psychological state is revealing of the way technical ideas about disasters have penetrated informal communities through workshops on disaster risk reduction and management organized by Buklod Tao. There is no Tagalog equivalent of the term.

Nonetheless the change in some people’s mental maps of floods coexists with an important continuity: Ondoy has not persuaded most of them to move to safer housing elsewhere. Most people still prefer to remain in Banaba; if they need to, they will have to move away to somewhere close by or in the vicinity. Lorina Poblete prefers to remain in Banaba Extension, where her family has resided since 1998, partly because they work in the area. This is her preferred option despite her experience of Ondoy, which found her at home alone with her children, whom she had to bring to safety before the house was swept away by the floodwaters (Poblete 2012). A fellow resident, Jesusa Lamanilao (2012), a laundrywoman in Marikina City, also prefers to live in a safer place where she can find work, such as Antipolo City or Montalban, but worries if she can find new clients there. These views are shared in general by residents of Metro Manila and Luzon after Ondoy (IPC 2011). Instead of relocating, most of Banaba’s informal settlers make efforts to recover from the flood in-situ: they have rebuilt or repaired their houses (partially in many cases due to the lack of funds); cleaned out the mud; and bought new television sets, washing machines, and other appliances that were lost in the flood.

The informal settlers have changed some—but not all—of their ideas about disasters, owing to the limited extent of their translation of disaster

expertise. People's willingness to appropriate disaster expertise has been shaped not only by the scale of Ondoy or the persuasiveness of technical options, but also by their views of the wider world. Among my interviewees, the sense of the capacity to change is constrained by what in their perspective are greater continuities. Their perception (rightly or wrongly) of the unchanging, unsupportive nature of Philippine government and politics influences their decision to remain along the rivers of Banaba. That the state could play a positive role in rehousing them is not among the expectations of most people with whom I spoke. Edna Carvajal (2012), a member of Buklod Tao, explains that living in Banaba Extension, although indeed dangerous, leaves them with "no choice" as they have no money to move elsewhere. She believes that only a fortunate few have been selected for government-aided housing elsewhere (*ibid.*). Lucy Cruz shares the commonplace distrust of the state because she has not seen the government deliver on its promise to relocate people to safe housing. Cruz (2012) adds that civil servants help only the people they know, not necessarily those who need help. These views often circulate within a web of information among informal settlers and their relations and friends. Lyn Ramos (2012), who would only consider relocation within San Mateo, relates how her sister has been relocated to public housing built by the National Housing Authority in Laguna province, where no electricity or livelihood opportunities exist. This skepticism might not be accurate, but many victims of Ondoy in Metro Manila and Luzon feel this way about the lack of assistance from the state (IPC 2011). When I asked Antonio Javier (2012) if he would consider moving elsewhere, he inquired sternly, why I would ask such a question. He argued, "Who would provide the money? Not the government . . . the government does not help poor people."

The wish to remain in Banaba is understandable. This desire also accounts for many residents' increased enthusiasm for disaster expertise: it gives them the hope of being able to cope with living in a dangerous environment while maintaining a way of life within a system that marginalizes them. According to Arnel Jacinto (2012), long-time resident and current president of the Neighborhood Association of South Libis and Baybay Ilog, it has become much easier to persuade people to evacuate their homes after Ondoy than previously. Bing Basco (2012), who has lived by the side of several rivers for many years and had gone to the roof of her house during Typhoon Ibiang, says that Ondoy has taught her a lasting lesson: she must evacuate to a safe

place. Municipal officials also note that, because of Ondoy, people have become more alert to the flood hazard and more willing to evacuate during a flood (Mendoza 2012). Renato Sulit (2012), barangay captain of Banaba, estimates that only 20 percent of the residents have remained stubborn ("matigas ang ulo"), refusing to evacuate during a flood.

In their view of the environment, the residents straddle the boundary of change and inertia, which lies in the gray zone between optimism and resignation. Asked about their ability to cope with future floods, many remain ambivalent. Danny Paymalan (2012), a part-time construction worker, says that he can only hope there would not be another Ondoy, for which he would not be financially prepared. Another crucial factor at work among the informal communities besides the technical and customary is that of religion. Reflecting on the experience of Ondoy, Antonio Javier (2012) notes, "Of course we are very afraid [of floods]—we are only waiting for the mercy of God to help us." For Lorina Poblete (2012), a Roman Catholic like most of her neighbors, religion is an important source of strength in her continuing struggle against the flood hazard. It is "by the grace of God," Romeo and Lourdes Tauza (2012) emphasize, that they have survived Typhoons Ibiang and Ondoy against the odds. Would disaster expertise enable people to manage the floods? "God only knows," Arnold Navarro (2012) replies. It seems that, although Manuel Abinales has combined "God and Preparedness," religion does not always lead people to embrace the optimism of disaster expertise.

In the ebb and flow between the technical, the customary, and the religious, physical markers reinforce memories of Ondoy on a daily basis in Banaba (fig. 5). These are marks of "remembrance," as one interviewee says in jest (Directo 2012). There are houses, roofs, floors, and walls that remain unrepaired or only partially repaired. In some areas the mud brought by the flood has raised the ground level significantly. In Banaba Extension, some windows of houses that were built before Ondoy are now just above ground level; outside one house, one bench is now barely visible, the mud having buried it almost entirely. Caked mud is still evident between bricks in many houses.

Nenita and Arnold Navarro have started to build a two-storey house adjacent to their single-level dwelling, but it has remained unfinished for lack of funds. During Ondoy they moved among the rooftops till they reached the safety of a three-storey house. They thought that day was "the



Fig. 5. Marks of Ondoy: floodwater levels still visible at a partly submerged house

end of the world”; should another Ondoy happen, they joke that they, as an interpreter puts it, would “punch it” (Navarro and Navarro 2012). The humor and irony in these remarks, which previously pointed to cultures of disaster, may now mean something else. Perhaps they signify a partial and fragile confidence about beating the floods, buoyed by disaster expertise. Or, perhaps, the expertise has been melded into the cultures of disaster.

Conclusion

This article highlights how informal settlers in Barangay Banaba translate community-based disaster expertise into a mixed bundle of measures comprised of the technical and the customary. This process of translation is enabled by the possibilities of adaptation, where the desire to reform is driven by the shock of Ondoy as an abnormal event that shattered people’s

frames of experience. The people’s organization Buklod Tao, too, has been effective in persuading informal settlers that disaster expertise is a solution to future crises. Faced with a huge flood many of these settlers have chosen evacuation to higher ground over the customary strategy of seeking refuge on the roof of their houses. They have also expanded their vocabularies to comprehend disasters. Terms like “risk,” “vulnerability,” and “trauma” have become part of their everyday discourse on the environment. At the same time, the capacity to change has been limited by continuities in the larger political, economic, and social context. Informal settlers continue to live close to the unpredictable river, and their pessimism toward moving to safer housing remains grounded in a deep distrust of state officials.

The process of crystallizing community-based disaster expertise in Banaba is not predetermined. People’s worldviews of floods and flood expertise have been affected by subsequent events. In August 2012, after the *habagat* (monsoon) brought more intense rains than Ondoy and inundated Banaba and most of Metro Manila for a period of several days, a news article suggested, “Deluge with no name threatens Ondoy’s place in history” (Panela 2012). Although Ondoy was forecasted as an occasional extreme event, such a view may now be seen as premature in an age of accelerated global warming and climate change. The media and weather experts have expressed concern over the fact that the August 2012 floods were brought about not by a typhoon but by regular, albeit unusually heavy, monsoon rains. In throwing doubt on the science of disaster extrapolation, the *habagat* floods may either reinforce or weaken people’s support for disaster expertise, but more research is needed on this subject. Still, the *habagat* floods clearly highlight the unpredictable impact disaster expertise may have on communities and the uneven paths by which such expertise travels.

This study offers two implications for disaster risk reduction and management. First, the better disaster response is not to impose solutions from above but to allow technical and customary measures to coexist in tandem and evolve. Informal settlers have often been vilified for distorting the aesthetic modernity of the city and contributing to the flood hazard. This study reveals that informal settlers are capable of moving between technical and customary measures, demonstrating agency in reconciling ostensibly contradictory positions. In due course, modernist efforts may be adapted into people’s cultures of disaster. Moreover, since the pace of translating expertise varies for different peoples and groups within the community,

disaster expertise needs to accommodate these differences. Paying heed to the local context is an established basis of community-based work, but what is often not recognized is the process of change and realignment in the community toward technical and customary measures—a process that can only be undertaken by the community itself.

Second, it is important to recognize the unpredictability of what happens to disaster expertise. Technical expertise is often transformed as it travels; the issue is less about the expertise being applied to the same problems in different places than about ideas being challenged and changed when these ideas move into different contexts (Mitchell 2002; Sneddon 2012). The community-based efforts of Buklod Tao (and other organizations in the Philippines) have achieved much in building resilience against future floods among marginal groups, when help from official sources is likely to be inadequate (Heijmans and Victoria 2001; Karaos 2012). At the same time, the complex ways in which expertise has been selectively adapted or ignored suggest the need for disaster workers to be intentionally reflexive about their roles in fostering change, particularly when change is affected by a combination of international, national, and local factors—including disaster events and the responses (or lack thereof) of state agencies and local and international organizations. Following the Indian Ocean tsunami, for instance, concerns have arisen over how cash-for-work programs, although delivering much-needed resources to disaster victims, could weaken community self-help in the long run (Brusset 2006). Would this occur in Banaba, given the social enterprises and livelihood projects that have been established there? Disasters, too, have the potential to foment discord among survivors. This social fact has been documented in post-tsunami Aceh (Saiful 2012) and may also happen in the Philippines due to the tensions between established and newly arrived settlers after a disaster. Even as communities adapt disaster expertise, we need to be mindful of the social implications and unintended consequences.

Abbreviations used

ADB	Asian Development Bank
GIS	geographic information systems
HUDCC	Housing and Urban Development Coordinating Council

IPC	Institute of Philippine Culture, Ateneo de Manila University
NCSO	National Census and Statistics Office
NDCC	National Disaster Coordinating Council
NSO	National Statistics Office

Notes

This work was supported by the National Research Foundation of Korea Grant, funded by the Korean Government (NRF-362-2008-1-B00018), and a research grant from the Center for Southeast Asian Studies at Kyoto University. I am also grateful for the interviews with municipal officials in Barangay Banaba conducted in 2012 by Michael D. Pante of the Ateneo de Manila University.

- 1 A more recent estimate by a barangay official is closer to 40,000, which indicates the high rate of in-migration (Sulit 2012).
- 2 In 1970 those who were born outside but living in Rizal province constituted 45 percent of the population. The province urbanized rapidly, with 95 percent of its population living in Antipolo City, the province's fastest-growing city, and in towns like San Mateo, whose population more than doubled from 12,000 to 29,000 between 1960 and 1970. In subsequent decades, the province continued to receive large numbers of migrants from Metro Manila and other parts of the Philippines (Filipinas Foundation Inc. 1975).
- 3 Since the late 1950s, floods in Metro Manila have worsened due to human activities such as rapid urbanization eastward from the cities of Manila and Quezon, deforestation in Marikina City and Montalban, and the disappearance of small rivers and canals due to urban development. From the 1970s, urban and commercial development on previously agricultural lands contributed to soil erosion and silting of riverbeds. Bankoff (2003a) points out that the increased incidence of floods affected informal settlers in particular, who in large numbers settled along riverbanks, canals, and esteros after the Second World War. In 2002 it was estimated that more than a third of Metro Manila's residents were informal settlers, and that this population was growing at more than double the city's total population. The surge in numbers was not deterred by the lack of employment (the unemployed make up half of the economically active migrants), while half of those employed were working in the informal sector on poor terms of work (ADB and HUDCC 2002).
- 4 According to a barangay official who has lived in Banaba since 1970, the rivers used to be fairly deep (*pantay-kawayan*, literally "as high as a bamboo pole," which is roughly equivalent to over 6 feet), but are now only knee- or waist-deep; in the past, when the rivers flooded the waters never reached the main streets (Sulit 2012).
- 5 In 1963 inner-city residents in Intramuros were forcibly relocated to a poorly furnished resettlement area in Sapang Palay outside Manila. In the long period of authoritarian rule between the late 1960s and mid-1980s, Pres. Ferdinand Marcos and his wife, Imelda, periodically mounted eviction drives against informal settlers, who were held to be in the way of the envisioned "New Society" and the regime's showcase of modern architecture. In the 1970s

“sites and services” upgrading projects funded by international agencies were implemented in informal settlements in areas like Tondo with some success. However, these projects gradually fell out of favor in the 1980s, due not only to difficulties in recovering costs from dwellers, but also because of opposition to the use of prime land for the unaesthetic informal housing (Pinches 1994).

- 6 However, two people in Banaba died during the floods and twelve others subsequently from leptospirosis (Sulit 2012).
- 7 Abinales himself underwent training in disaster preparedness initiatives at the local parish.
- 8 Gabion Box walls are galvanized wire boxes weighed down with stone.

References

- Abinales, Manuel. 2003. In times of affliction: God and preparedness are our protection. *Philippine Sociological Review* 51(Jan.–Dec.): 151–62.
- , with Michael Vincent DC Mercado. 2012a. Survivors, not victims. Resilient, not downtrodden. Forging unity in Barangay Banaba for better CBDRRM. In *Resilient urban communities: Stories from the Ketsana Rehabilitation Programme*, ed. Anna Marie A. Karaos, 14–27. Quezon City: Christian Aid.
- . 2012b. Interview by the author, 5 July, Banaba, San Mateo, Rizal.
- Aldrich, Daniel P. 2011. The power of people: Social capital’s role in recovery from the 1995 Kobe earthquake. *Natural Hazards* 56:595–611.
- . 2012. Social, not physical, infrastructure: The critical role of civil society after the 1923 Tokyo earthquake. *Disasters* 36(3): 398–419.
- Allen, Katrina M. 2006. Community-based disaster preparedness and climate adaptation: Local capacity-building in the Philippines. *Disasters* 30(1): 81–101.
- Antolihao, Lou. 2004. *Culture of improvisation: Informal settlements and slum upgrading in a Metro Manila locality*. Quezon City: Institute of Philippine Culture, Ateneo de Manila University.
- Asian Development Bank (ADB) and Housing and Urban Development Coordinating Council (HUDCC). 2002. *Metro Manila urban services for the poor: Final report*, vol. 1: *Main Report*. Mandaluyong City: ADB.
- Bankoff, Greg. 2003a. Constructing vulnerability: The historical, natural and social generation of flooding in Metropolitan Manila. *Disasters* 27(3): 224–38.
- . 2003b. *Cultures of disaster: Society and natural hazards in the Philippines*. New York: RoutledgeCurzon.
- . 2007. Dangers to going it alone: Social capital and the origins of community resilience in the Philippines. *Continuity and Change* 22(2): 327–55.
- . 2012. Storm over San Isidro: “Civic community” and disaster risk reduction in the nineteenth century Philippines. *Journal of Historical Sociology* 25(3): 331–51.
- Bankoff, Greg and Dorothea Hilhorst. 2009. The politics of risk in the Philippines: Comparing state and NGO perceptions of disaster management. *Disasters* 33(4): 686–704.
- Basco, Bing. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 12 July.

- Berner, Erhard. 1997. *Defending a place in the city: Localities and the struggle for urban land in Metro Manila*. Quezon City: Ateneo de Manila University Press.
- Blaikie, Piers, Terry Cannon, Ian Davis, and Ben Wisner. 1994. *At risk: Natural hazards, people’s vulnerability, and disasters*. London: Routledge.
- Brusset, Emery, Wartini Pramana, Anne Davies, Yashwant Deshmukh, and Susanne B. Pedersen. 2006. *Evaluation of the linkage of relief, rehabilitation and development (LRRD) regarding interventions in connection with the tsunami disaster in December 2004: Indonesia case study*. London: Tsunami Evaluation Coalition.
- Burgonio, T. J. 2012. Earth Day: It takes a village to be ready for next ‘Ondoy,’ *Philippine Daily Inquirer*, 22 Apr. Online, <http://newsinfo.inquirer.net/180557/earth-day-it-takes-a-village-to-be-ready-for-next-ondoy>, accessed 23 Apr. 2012.
- Carvajal, Edna. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Carvajal, Rhiza. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Caybot, Alfonso. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Clancey, Gregory K. 2006. *Earthquake nation: The cultural politics of Japanese seismicity, 1868–1930*. Berkeley: University of California Press.
- Cooke, Bill and Uma Kothari, eds. 2001. *Participation: The new tyranny?* London: Zed Books.
- Cosgrave, John. 2007. *Synthesis report: Joint evaluation of the international response to the Indian Ocean tsunami*. London: Tsunami Evaluation Coalition.
- Cruz, Lucy [pseud.] 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Czarniawska, Barbara and Guje Sevon. 2005. *Global ideas: How ideas, objects and practices travel in the global economy*. Malmö: Liber; and Copenhagen: Copenhagen Business School Press.
- De Belen, Mila. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 26 July.
- Directo, Elizabeth. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 26 July.
- Encinas, Francia. 2012. Interview by the author, South Libis, Banaba, San Mateo, Rizal, 25 July.
- Erikson, Kai T. 1976. *Everything in its path: Destruction of community in the Buffalo Creek flood*. New York: Simon and Schuster.
- Esben, Armando. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Filipinas Foundation Inc. 1975. *Understanding the Filipino migrant: An in-depth study of the motivational factors behind internal migration*. Makati: Filipinas Foundation, Inc.
- Guinness, Patrick. 2009. *Kampung, Islam and state in urban Java*. Singapore: NUS Press.
- Heijmans, Annelies and Lorna P. Victoria. 2001. *Citizenry-based and development-oriented disaster response: Experiences and practices in disaster management of the citizens’ disaster response network in the Philippines*. Quezon City: Center for Disaster Preparedness.
- Hernandez, Felix. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 12 July.
- Institute of Philippine Culture (IPC). 2011. *The social impacts of tropical storm Ondoy and Typhoon Pepeng: The recovery of communities in Metro Manila and Luzon*. Quezon City: Institute of Philippine Culture, Ateneo de Manila University.
- Jacinto, Arnel. 2012. Interview by the author, South Libis, Banaba, San Mateo, Rizal, 20 July.

- Javier, Antonio. 2012. Interview by the author, Riverside, Banaba, San Mateo, Rizal, 25 July.
- Jellinek, Lea. 1991. *The wheel of fortune: The history of a poor community in Jakarta*. London: Asian Studies Association of Australia in association with Allen and Unwin.
- Jocano, F. Landa. 1975. *Slum as a way of life: A study of coping behavior in the urban environment*. Quezon City: University of the Philippines Press.
- Karaos, Anna Marie A., ed. 2012. *Resilient urban communities: Stories from the Ketsana rehabilitation programme*. Quezon City: Christian Aid.
- Lagmay, A. M. F. and C. A. Arcilla. N. d. Lessons from recent Philippine disasters. National Institute of Geological Sciences, College of Science, University of the Philippines. Internet document, http://www.academia.edu/693831/Lessons_from_recent_Philippine_disasters, accessed 14 Mar. 2012.
- Lamanilao, Jesusa. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Leolanda, Linda. 2012. Interview by the author, Riverside, Banaba, San Mateo, Rizal 6 July.
- Loh Kah Seng. 2013. *Squatters into citizens: The 1961 Bukit Ho Swee fire and the making of modern Singapore*. Singapore: NUS Press and Asian Studies of Australia Association, Southeast Asia Series.
- Mandigma, Rechiel. 2012. Interview by the author, South Libis, Banaba, San Mateo, Rizal, 20 July.
- Mendoza, Ramoncito. 2012. Interview by Michael Pante, San Mateo Municipal Hall, San Mateo, Rizal, 16 Oct.
- Mitchell, Timothy. 2002. *Rule of experts: Egypt, techno-politics, modernity*. Berkeley: University of California Press.
- Municipality of San Mateo. 2011. *San Mateo comprehensive land use plan 2010–2020*. San Mateo, Rizal: Municipality of San Mateo.
- National Census and Statistics Office (NCSO). 1970. *1970 Census of population and housing*, vol. 1: *Rizal*. Manila: National Census and Statistics Office.
- National Disaster Coordinating Council. 2009. Final report on tropical storm Ondoy (Ketsana) and Typhoon Pepeng (Parma). Internet document, http://ndcc.gov.ph/attachments/092_NDCC%20Update%20Final%20Report%20re%20TS%20Ondoy%20and%20Pepeng.pdf?, accessed 20 April 2012.
- National Statistics Office (NSO). 2012. *2010 Census of population and housing*. Quezon City: National Statistics Office.
- Navarro, Arnold. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 26 July.
- Navarro, Arnold and Nenita Navarro. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 26 July.
- Ortega, Gaspar. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 12 July.
- Panela, Shaira. 2012. Deluge with no name threatens Ondoy's place in history. *GMA News Online*, 8 Aug. Online, <http://www.gmanetwork.com/news/story/268900/scitech/science/deluge-with-no-name-threatens-ondoy-s-place-in-history>, accessed 10 Aug. 2012.
- Paymalan, Danny. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Pelling, Mark. 2003. *The vulnerability of cities: Natural disasters and social resilience*. London: Earthscan Publications.
- Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). 2009. *Annual Report*. Quezon City: PAGASA, Department of Science and Technology.
- Pinches, Michael. 1994. Modernisation and the quest for modernity: Architectural form, squatter settlements and the new society in Manila. In *Cultural identity and urban change in Southeast Asia: Interpretive essays*, ed. Marc Askew and William Logan, 13–42. Geelong, Vic: Deakin University Press.
- Poblete, Lorina. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 10 July.
- Ramos, Lyn. 2012. Interview by the author, South Libis, Banaba, San Mateo, Rizal, 25 July.
- Saiful Mahdi. 2012. Factors determining the movements of internally displaced persons (IDPs) in Aceh. In *From the ground up: Perspectives on post-tsunami and post-conflict Aceh*, ed. Patrick Daly, R. Michael Feener, and Anthony Reid, 132–55. Singapore: Institute of Southeast Asian Studies.
- Smart, Alan. 2006. *The Shek Kip Mei myth: Squatters, fires and colonial rulers in Hong Kong*. Hong Kong: Hong Kong University Press.
- Sneddon, Chris. 2012. The “sinew of development”: Cold war geopolitics, technical expertise, and water resource development in Southeast Asia, 1954–1975. *Social Studies of Science* 42(4): 564–90.
- Sulit, Renato. 2012. Interview by Michael Pante, Banaba Ext., San Mateo, Rizal, 18 Oct.
- Tauza, Romeo, Lourdes Tauza, and Renato Dandan. 2012. Interview by the author, Banaba Ext., San Mateo, Rizal, 12 July.
- Trager, Lillian. 1988. *The city connection: Migration and family interdependence in the Philippines*. Ann Arbor: University of Michigan Press.
- Tran, Phong, Rajib Shaw, Guillaume Chantry, and John Norton. 2009. GIS and local knowledge in disaster management: A case study of flood risk mapping in Viet Nam. *Disasters* 33(1): 152–69.
- Wisner, Ben, J. C. Gaillard, and Ilan Kelman, eds. 2011. *Handbook of hazards and disaster risk reduction*. London: Routledge.
- Zoleta-Nantes, Doracie, Ann Hill, and Perfecto Rom. 2011. Community-based risk management and social enterprise programs of Buklod Tao-Philippines. Unpublished ms.

Loh Kah Seng is assistant professor, Institute for East Asian Studies, Sogang University, 35 Baekbeom-ro (Sinsu-dong), Mapo-gu, Seoul 121–742, Republic of Korea. He teaches Southeast Asian history and researches on the transnational and social history of the making of modern Southeast Asia after the Second World War. Loh is author and editor of five books, including *Squatters into Citizens: The 1961 Bukit Ho Swee Fire and the Making of Modern Singapore* (2013) and *Oral History in Southeast Asia: Memories and Fragments* (coedited with Stephen Dobbs and Ernest Koh, Palgrave Macmillan 2013). <lohks@sogang.ac.kr>

