

RESILIENCE: RESPONSE, RECOVERY AND ETHNICITY IN POST-DISASTER PROCESSES

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Introduction

On 2 April, 2007 the Solomon Islands were hit by an 8.1 Magnitude earthquake and subsequent tsunami. The tsunami, in particular, wrought extensive damage amongst communities inhabiting the western part of the country, and was responsible for 50 of the 52 casualties. Ghizo Island was one of the islands hit the hardest. The Gilbertese ethnic minority living on Ghizo suffered from the disastrous impacts of the hazards; a disproportionately high number of Gilbertese people died and those who survived faced large difficulties in trying to cope with the immediate aftermath of the earthquake and tsunami. One of the main findings of research carried out on Ghizo in 2011, 2012, and 2013 was that, as a result of learning from these experiences, the Gilbertese survivors made changes in their socio-cultural fabric to make themselves more resilient to future disasters.

This paper presents an account of how differences in ethnic communities' responses to hazards faced shaped differences in their trajectories of recovery. To aid the understanding of the findings presented, the context of research and methodology used are briefly described below. It is followed by an account of the differences in responses between the Melanesian ethnic majority and the Gilbertese ethnic minority, and the implications these differences had for the longer-term socio-cultural recovery of the Gilbertese survivors. The final section presents the conclusion along with recommendations for research and developing effective disaster risk reduction strategies.

Context of research

The Solomon Islands is a nation comprising 992 islands. The majority of its 0.5 million people (Solomon Islands National Statistics Office, Ministry of Finance & Treasury 2009) is Melanesian, although, approximately 1.2 per cent of the population is Micronesian. On Ghizo Island however, an island measuring 11 by 5 kilometres with a population of c. 7000 people, the Micronesian population is much higher. Most of Ghizo's Micronesian people are originally from Kiribati's Gilbert Islands, and had been relocated to the Solomon Islands between the late 1950s and 1971 (Campbell et al. 2007, Cochrane 1970), which, like Kiribati, was a British Protectorate at the time. Although not all Gilbertese migrants were relocated to Ghizo directly, many moved to Ghizo after initially settling on other islands in the western part of the Solomon Islands. Ghizo is one of the Solomon Islands' most desired places to live, as it is home to Gizo town. The main hospital and largest produce-market of the western part of the country are located there, as well as an airport with daily flights to the country's capital, Honiara.

The Melanesian and Gilbertese people on Ghizo live in largely segregated communities: there is little intermarriage, and they predominately live in different villages. When arriving in Ghizo, the Gilbertese migrants settled along the coastline; easy access to the ocean was desired as ocean-based resources are their main means of providing food without the interference of economic transactions. Ghizo’s Melanesian Solomon Islanders have long practiced gardening on a medium to large scale, in addition to relying on the ocean’s resources. Their gardens, usually situated further inland on the islands’ hills, are home to a large variety of fruits and vegetables. The gardens’ produce and edible wild foods provided by Ghizo’s tropical rainforest constitute a large part of the Melanesian Solomon Islanders’ daily diet. In combination with fishing and harvesting seafood, these are their main means of direct food provision.

On April 2, 2007, at 07:39 AM local time (April 1 2007, 20:39 UTC), the morning rituals of Ghizo’s islanders were disturbed by a submarine magnitude 8.1 earthquake. This earthquake occurred along a fault on the Pacific plate, close to the intersection of three plates (Pacific, Australian, and Woodlark) (see Figure 1). Despite on-going seismic activity, this was the first earthquake larger than M 7.0 to hit the area since the early 20th Century (SOPAC 2008). The most severe shaking was felt on Ghizo and surrounding islands as they were located closest to the earthquake’s epicentre at 45 kilometres south-south-east of Ghizo Island (USGS 2007). However, it was not the earthquake that did the most damage, but the following tsunami waves that reached Ghizo and neighbouring islands within five minutes after the earthquake, roughly ten minutes before an official tsunami warning was issued by the Pacific Tsunami Warning Center in Hawaii at 20:55 UTC (NOAA n.d., NOAA 2007). The tsunami caused significant damage and loss of life on Ghizo. Of the 33 casualties on Ghizo, 31 were inhabitants of Gilbertese villages (McAdoo 2009).

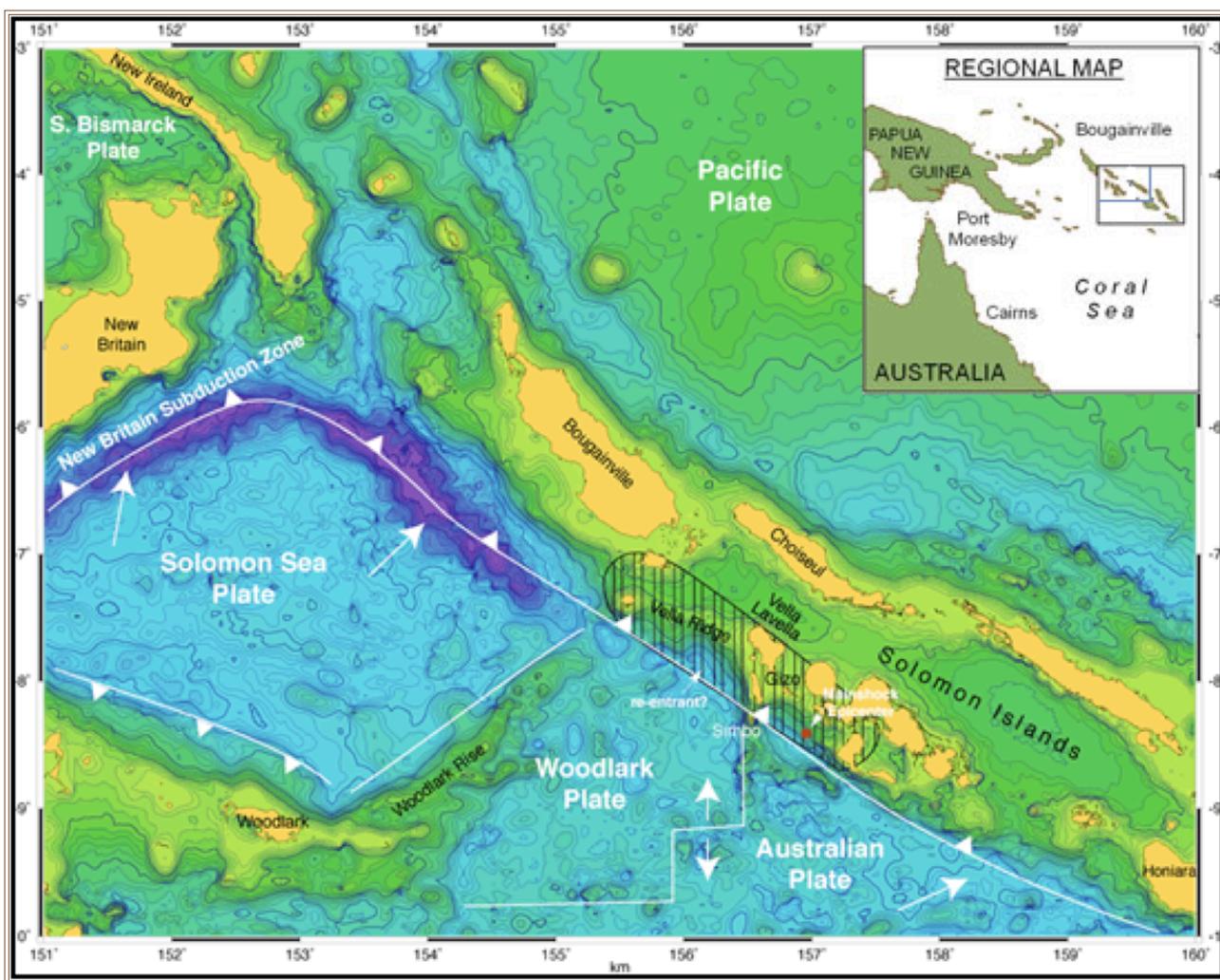


Figure 1 Tectonic plates and plate boundaries near the Solomon Islands. The Solomon Sea plate, the Woodlark plate, and the Australian plate are currently subducting below the Pacific plate at the destructive plate boundary, south-west of the Solomon Islands. The red dot indicates the epicentre of the 2007 earthquake, the orange circle, the location of Ghizo Island. The inset shows where the country is located; the smaller rectangle indicates the area presented at this map. Source: USGS 2007.

Methodology

The research presented here is based on three field visits to Ghizo Island in March 2011, April-June 2012, and March 2013, covering a total of four months. Ethnography, a largely qualitative approach in which the researcher immerses himself/herself in the research setting, is the overarching approach used in this research. Multi-sited micro-ethnography was chosen for this research: multi-sited to encompass the differences in post-disaster processes in culturally diverse groups inhabiting the same island; micro-ethnography because the research had a particular focus and did not aim at providing an impression of an entire culture. Ethnographic research in this manner was carried out by spending equal amounts of time in four villages on Ghizo Island: two Melanesian villages, Pailongge and Saegeraghi, and two predominately Gilbertese villages, Niu Manra and Nusa Baruka (see Figure 2). In addition to participant observation and informal conversations as part of ethnographic research, focus groups in all villages were organised in which participants were asked to take part in participatory exercises inspired by Chambers' (1994) participatory methods. In each village a community profile, historical timeline, village map, impact diagram, cause-effect diagram, and post-tsunami timeline were created. Based on the data derived from these exercises, the 22 in-depth interviews with survivors and aid organisations were part of the disaster interventions after the earthquake and tsunami were carried out in the last set of fieldwork.



Figure 2 Map of Ghizo Island indicating research locations. The Gilbertese villages are indicated in yellow, the Melanesian villages in blue. Gizo town is indicated as a reference point. Source: adapted from: UNITAR/UNOSAT 2007.

Melanesian and Gilbertese responses in facing the 2007 earthquake and tsunami

Large inter-group differences occurred in the initial reactions of the Gilbertese and Melanesian Solomon Islanders when it was realised a major natural event was occurring and affecting their communities. The majority of the Melanesian villagers ran to higher ground immediately after the earthquake or when the first signs of changes in the sea were observed. This behaviour was shaped by ancestral knowledge on tsunamis and tsunamigenic earthquakes: this knowledge was partly gained from a commercial movie on a tsunami which was played in Melanesian villages a few weeks prior to the 2007 tsunami, and by knowledge of the 2004 Indian Ocean tsunami rapidly spread by two British tourists who stayed in one of the Melanesian villages.

This locally-relevant life-saving knowledge was largely absent in the Gilbertese villages: the Gilbertese did not know of ancestral stories about tsunamis, they had not seen a movie on tsunamis, no tourists had stayed in their villages, nor had they acquired such knowledge from other sources. In addition, the physiography more often impeded a quick escape to higher ground amongst the Gilbertese inhabitants of Ghizo when compared with their Melanesian neighbours: in Niu Manra and Nusa Baruka several people got stuck in mangrove forests in and around their villages. Additionally, they did not have footpaths related to gardening as a livelihood activity, which facilitated getting to higher ground in the Melanesian villages. These three factors: knowledge, physiography, and footpaths, resulted in a reaction that saved lives amongst the Melanesian islanders but, unfortunately, a reaction that cost lives amongst the Gilbertese islanders. Appropriate reactive behaviour to impending disaster events is a form of dealing with crisis by limiting the intensity of the crisis. Variations in reactions between the ethnic groups therefore, testify to variations in the resilience of these groups to the earthquake and tsunami faced.

In addition to differences between the ethnic groups' reactions to the earthquake and tsunami, significant differences in their behaviour occurred whilst coping with the immediate consequences of these hazards. The four villages researched were all severely affected by the tsunami, and people had sought refuge on higher ground where they waited for disaster aid to arrive. Due to the isolated location and infrastructure damaged by the earthquake and tsunami, it took nearly four days for disaster aid to arrive on Ghizo. For the time-period between the occurrence of the hazards and the arrival of disaster aid, survivors had to cope on their own. The Melanesian survivors managed to do so in a largely self-reliant manner. Their gardens played a prominent role in this. Located predominately on higher ground, the gardens were mainly untouched by the tsunami. As all Melanesian villagers had gardens, they could rely on home-grown food produce for survival. In the rare examples where gardens were affected by the tsunami, root crops had often stayed in the ground and could be harvested for consumption. A second source of food used to cope with the immediate disastrous consequences were edible wild plants, or bush foods, on which the Melanesian Solomon Islanders had extensive knowledge. Young, green coconuts, from both gardens and bush, provided water to drink.

Melanesian Solomon Islanders made fire to prepare food by rubbing sticks together when matches or lighters were not available. In the absence of dry coconut husks or firewood to feed the fire, twigs were gathered and used. As many cooking utensils had washed away, Melanesian survivors largely relied on traditional ways of cooking, such as motu cooking and bo-ne bo-ne cooking. Motu cooking is undertaken by wrapping food like potatoes or bananas in banana-leaves along with a few hot stones, and subsequently placing the wrapped bundle on more hot stones (see Figure 3). As the food is wrapped in the leaves in a relatively airtight manner the food is both steamed and roasted in the process. Bon-ne bo-ne cooking is done by placing the food directly in the fire and turning it around until all sides are equally black. The food is then taken out, the blackened skin of the food is taken off, and the inside is eaten.



Figure 3 Cooking potatoes the motu way.

The presence of gardens, knowledge on edible wild foods, and knowledge of food preparation and cooking without modern-day kitchen utensils are practices and patterns embedded in Ghizo's Melanesian islanders' culture. This resilience which assists with solutions to hazard-related problems is termed 'disaster subculture' by Anderson (1965). It serves as a blueprint for behaviour before, during, and after the impact of hazards. The locally-relevant disaster subculture of the Melanesian Solomon Islanders is likely the residue of generation-long learning from previous hazards and disastrous consequences in that area. However, the relatively recent El Niño episode in 1997 played a particularly strong role in reinforcing the development of this subculture. El Niño brought serious drought throughout the Solomon Islands, which heavily affected Ghizo's Melanesian Solomon Islanders. In response, they re-emphasized practices and behaviours to limit the disastrous impacts of the drought: traditional cooking as it uses little water, reliance on wild edible foods as gardens could not be watered, and planting drought-resistant root crops that can stay in the ground for a long period of time and be harvested when needed. Additionally, El Niño served as a reminder of the importance of passing on knowledge on these practices to younger generations. The disaster subculture re-emphasised after the 1997 El Niño helped Melanesian Solomon Islanders to cope in a self-reliant manner with the disastrous consequences of the 2007 earthquake and tsunami.

The coping mechanisms inherent to the Melanesian islanders' culture, reflecting their capacity to deal with the havoc, were largely absent amongst the Gilbertese Solomon Islanders. Like the Melanesian survivors, they were afraid to approach the sea after the tsunami. Hence their ocean-based livelihood activities could not provide them with food. Despite having lived in the Solomon Islands for several decades, gardening was not taken up on a large scale as it was not seen as part of their culture. The consumption of wild plants by Melanesian Solomon Islanders had been frowned upon, and it was doubted whether these 'foods' were really edible. Knowledge on wild edible plants and the consumption thereof was largely absent amongst the Gilbertese living on Ghizo. Additionally, practices of food security which had been re-emphasised amongst Melanesian Solomon Islanders during the 1997 drought had not been stressed by the Gilbertese Solomon Islanders. The Gilbertese Solomon Islanders had barely been affected by the drought as they relied on the ocean. They did not perceive themselves to be at risk to natural hazards in the Solomon Islands, and did not alter any practices to increase their resilience to deal with disaster. Their means of preparing for disaster consisted largely of drying fish, which had proven to be adequate in Kiribati when cyclones prevented going out to the ocean. Their dried fish, along with most other possessions, was washed away by the 2007 tsunami and proved to be of no value.

As a result of having almost no gardens, no knowledge on wild foods, and no other locally-relevant means for acquiring a decent level of food-security, the Gilbertese survivors struggled to cope in a self-reliant manner which intensified the disastrous effects of the hazards for them. They had to rely on given or found ready-made food, such as cans of tuna and packets of biscuits. The occasional crops or plants that were found could not always be prepared for consumption; the Gilbertese did not practice traditional ways of cooking like the Melanesian Solomon Islanders did. The differences in the ethnically-diverse groups' abilities to deal with the damage caused by the natural hazards point to differences in their resilience to these events.

Five years later

Struggling for survival and not being able to cope in a self-reliant manner prompted the awareness amongst the Gilbertese that they were ill-equipped to deal with disastrous consequences of some of the hazards occurring in the Solomon Islands. They learned from the differences in experiencing the impacts of the hazards between them and their Melanesian neighbours. As a result, they made changes in their socio-cultural fabric to increase their resilience to future disasters.

After the tsunami, both Gilbertese and Melanesian Solomon Islanders moved to higher ground in large numbers, out of fear for a repetition of the events. For the Gilbertese, this meant that they now had easier access to land on which they could make gardens. Although land rights are not always secured, Gilbertese started to adopt the practice of making gardens to increase the diversification in their food-producing livelihood activities (see Figure 4); they had realised that the absence of gardens played a vital role in their lack of ability to cope in a self-reliant manner with the 2007 earthquake and tsunami. Gilbertese gardens are not as large in size as those of Melanesian Solomon Islanders, generally displaying a smaller variety of crops, and food is grown for personal use. They are not used as an income-producing activity, but merely for food-security. Ocean-based livelihood activities are still used as primary means of food provision, as well as means of income generation.



Figure 4 Left: Impression of a Gilbertese family's garden in Nusa Baruka in 2012. Right: a Gilbertese woman with child walking to the garden of one of her Gilbertese neighbours on higher ground Nusa Baruka. In both cases the gardens and homes were created after moving land inwards out of fear for another tsunami.

Additionally, the Gilbertese survivors developed an interest in wild-edible foods, as they learned that these fruits and vegetables cover the whole island and can almost always be relied on. Incorporating knowledge on and use of foods provided by the terrestrial ecosystem into their food-providing livelihood activities contributed to the strength of their livelihood diversification: not only do they now have several food-producing livelihood activities, these activities are also spread over various locations. This reduces the risk of food-producing livelihood activities being destroyed or made inaccessible by a single hazard. Motu-cooking as practiced by Melanesian Solomon Islanders was also adopted by Ghizo's Gilbertese islanders. Particularly in the immediate aftermath of the 2007 events, the interest in motu-cooking increased tremendously.

Conclusion

Differences in the strategies of Ghizo's Melanesian and Gilbertese inhabitants to cope with the havoc caused by the earthquake and tsunami is largely explained by the pre-existence or non-existence of a locally-relevant disaster subculture, particularly with reference to the strength of the diversification of livelihood activities. In line with Wisner et al. (2004), the processes depicted above illustrate that affected communities can learn from the experiences of a disaster; they are able to make changes in their socio-cultural make-up to overcome the havoc caused by the hazards and to better prepare for future events (Birkmann 2010, Gaillard & Le Masson 2007). Hence understanding communities' responses, and the differences therein, provides valuable indicators of trajectories of recovery. In turn, analysing socio-cultural recovery processes provides insight into which post-disaster changes within the impacted communities are taking place and how these changes inform community resilience for future disaster risk. Hazard and disaster research as carried out today often overlooks or misunderstands the important information the post-disaster processes can provide (Birkmann 2010). In particular, there is a shortage of such studies focussing on small island developing states (Meheux et al. 2007), and on the role of ethnicity in disaster responses (Gaillard 2012). This information is critical for drafting effective disaster risk reduction strategies and to build resilience (Bird et al. 2011). Ignoring this information can result in inappropriate allocation of resources for disaster management and missed lessons for disaster mitigation (Birkmann 2010). This paper therefore, calls not only for an increase in studies on post-disaster processes in small island developing states, and in particular on the role of ethnicity, but also for a stronger integration of findings of such research in disaster risk reduction policies.

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