THE CREATION OF CULTURES OF RISK

Political and commercial decisions as causes of vulnerability for others

AN ANTHOLOGY

BANGLADESH
CHINA
DOMINICAN REPUBLIC
GERMANY
INDONESIA
ITALY
MARTINIQUE
NEPAL
PAKISTAN
PHILIPPINES
TONGA
TURKEY
TUVALU
UNITED KINGDOM
USA

James Lewis

September 2008
http://www.islandvulnerability.org/docs/lewis2008risk.pdf

THE CREATION OF CULTURES OF RISK:
Political and commercial decisions as causes of vulnerability for others

AN ANTHOLOGY

James Lewis
September 2008

Socio-cultural, historical, political, and economic factors are central to the happening of disasters. Vulnerability is produced by certain structural, socio-cultural-economic and political formations independent of natural hazards. In the Philippines, religion (the 'Act of God' notion) and the government (looking upon disasters as 'natural') play a key role in reinforcing the (mis)- representation of disasters as natural uncontrollable events. Contradictory to the belief that hazard events bring disasters, there is a need to educate people to the fact that our own nature and practices are responsible for disasters. Disasters happen because of difficult access to resources, poverty, low social protection and the larger political economy system.

Emmanuel Arcenal Maceda, University of the Philippines Mountain Forum Global E-conference on Culture and Risk: Understanding the Socio-Cultural Settings that Influence Risk from Natural Hazards ICIMOD/ SIDA Sept-Oct 2008 Moderator: Ken Hewitt. Theme 1: The role of socio-cultural settings in influencing people's capacities to deal with risk from natural hazards and to adopt or reject modern safety measures car@mtnforum.org

Disasters result when natural hazards impact upon vulnerable conditions. Since it began to be recognised that natural hazards were not the sole cause of disasters and that the activities of humankind also had a part to play, one interpretation of disasters has been that people themselves were responsible for their own "adjustments" to hazards and vulnerability came to be measured and enumerated for that purpose.

Most people's vulnerability, however, is created not by their own actions and inactions but, inadvertently or not, by actions and inactions of others, over which they have no control and who act in their own political and commercial self-interest.

Some of those decisions and actions, and the authorities that issue them, are so long-term and institutionalised, and so ingrained and normal, that their domination, control and influence has become a characteristic of everyday life and a significant aspect of social culture.

Without the power to effect change, though not regarded as "right", prevailing situations come to be accepted. The power is with those who benefit, not with those who suffer the consequences of oppression, disadvantagement, exploitation, consequent poverty – and vulnerability.

Disaster risk prevails where natural hazards meet geographical or socio-economic vulnerability; vulnerability is the one component of risk that can be changed. Modification of sinister and insidious influences over people's lives could be made to begin by its exposure – for which a free and independent media is a powerful tool.

The examples of cultures of risk that follow are taken from the few on record in the hope that their further exposure will serve towards some reduction of people's vulnerability.

Bangladesh

In Bangladesh, during five years of the 1990s, a major internationally funded project for the construction of hundreds of cyclone shelters was planned and prepared up to the point of construction commencement. The shelters were designed for everyday use as primary schools and would have repeatedly saved thousands of lives in cyclones and associated massive storm-surges. Government go-ahead was not forthcoming, the only hint of explanation being "we all know what is required to kick-start the process again".

Corruption prevented the construction of cyclone shelters that would have provided shelter, protection and primary education, repeatedly, to thousands of Bangladeshis and their children throughout the cyclone high risk zone of coastal Bangladesh.

Lewis, James (2004) *Earthquake destruction: corruption on the fault line ?* Second draft for Global Corruption Report 2005: Corruption in Construction and Post-Conflict Reconstruction Berlin. Transparency International.

China

The Chinese government has more than 1,200 laws, rules and directives against corruption but their implementation is ineffective. With only a 3 percent likelihood of a corrupt official being sent to jail, corruption is a low-risk high-return activity. Even low-level officials have the opportunity to amass an illicit fortune of tens of millions of yuan. The CCP secretary in Janwei county of Sechuan province acquired 34 million yuan (£2,472,872 / US$4,897,018) and the colleague of another CCP secretary, his city's anti-corruption chief, collected bribes worth more than 30 million yuan (£2,182,380 / US$4,320,898).

Corruption in China is concentrated in those sectors with extensive state involvement, such as infrastructure projects and government procurement, the consequent increased costs of which have been estimated as 10 per cent of spending during a ten year period ending in 2005. Such a depletion of funds contributes to environmental degradation, social instability and inadequate health care, housing and education: "To estimate roughly the direct costs of corruption, we can suppose that 10 per cent of government spending, contracts, and transactions is used as kickbacks and bribes or is simply stolen". China is 72nd on Transparency International's (2007) corruption index.

At the time of writing (June 2008), the total of dead and missing in the 2008 R7.9 Sichuan earthquake stands at 75,000, caused by collapse of buildings and by landslides; housing, apartment buildings, hospitals, industrial buildings, and 7,000 school classrooms are reported as having been destroyed. The inward total collapse of Juyuan Middle School itself caused the deaths of 900 children, triggering vociferous local protests: "The local officials get money from above and then they take it for themselves". The school has become "a bleak symbol of the deadly mix of natural destructive power and slipshod building...".

In Dujiangyan, buildings directly next to the destroyed school were left standing: "...there's no steel in the concrete...the debris was basically sand – not even pieces of concrete". "We cannot afford not to raise uneasy questions about the structural quality of school buildings... we saw elegant government buildings remain intact while dozens of schools crumbled like houses of sand". "It was built in a very short time. They added one floor at a time, and

continued building as they had money for it. So the base was not made for several floors. It was too weak. The whole building collapsed, straight down, hardly without shaking, even".

China's building code is reported as long having required new structures to withstand earthquakes, but standards from region to region remain inconsistent. A grade of 7, of a scale up to 10, applies throughout Sichuan, the grade of 8 for Shanghai is the same and that for Beijing. Larger rooms and consequently larger structural spans, where structures are built as calculated, are not a reason for the systemic collapse of schools. Not all destroyed buildings, including schools, were a direct result of the earthquake but of landslides triggered by earthquake activity.

Not long after the earthquake of 12 May, probably as a response to Chinese and foreign media pressure, the Chinese government were reported to have instituted an inquiry into why so many schools collapsed. One month later, on 7 June, it was further reported that police were preventing Chinese media from reporting on school destruction and that people were being told by police not to talk to the media. Nationwide school safety checks had been ordered after the earthquake but at Jiandi Middle Scool, where 50 schoolchildren were crushed to death, parents' were saying that "the school was constructed on the cheap". The growing controversy over official negligence was reported as "eroding the wide public support Beijing enjoyed in the days after the earthquake"; a sign at the school being translated as "A natural disaster is irreversible; a man-made disaster is inexcusable".

Until more detailed information becomes available, it can be assumed that school construction lends itself to corrupt local depletion of funding intended by central sources for construction. In other words, design and specification to statutory regulations and codes could have been compromised by depletion of funds for construction payments. Institutionalised depletion of funding for new schools would explain the high incidence of school building failure. As well, on site, Chinese builders are said to often use a series of local sub-contractors, a practice that complicates working procedures, obscures shortcomings and substandard substitutions, and by which costs are increased "as each contractor takes his share of the project budget".

One exceptional report indicates practise that should be normal: "In the heart of the disaster zone", the Bechuan county Liu Han Hope Elementary school and all of its 483 children survived, its community expressing gratitude for "the effort the company put into building the schools...". Its project manager recalls "his bosses had stressed the importance of safety" but also he recalled "the battles that had been involved...to force the builders to replace substandard cement (concrete) and with officials who had intercepted part of the funding".

Lewis, James (2008) *Corruption and earthquake destruction: Observations on events in Turkey, Italy and China* (*revised September 2008*) http://www.radixonline.org/latest.htm

Dominican Republic

Large scale cash-cropping was identified as responsible for the displacement of small landowners, obliged to relocate to marginal exposed land and rendered in consequence as more physically and economically vulnerable. La Caguaza, for example, in the low-lying flood-prone areas next to the Ozama River, had been a community of small-scale cultivators,

with production focussed on subsistence crops combined with cocoa, coffee and bananas, and the raising of pigs and cattle. In 1957, President Trujillo sent in bulldozers without warning and all existing crops were destroyed, together with extensive woodland. More than half of the 22 households were dispossessed and obliged to leave. No compensation was paid, although the land was said to have belonged to those who farmed it.

This area, and others like it, are now entirely treeless and sown mostly with sugar cane owned by the state. The river banks, now unreinforced by tree roots, are more prone to recurrent erosion and are consequently much lower than they were before deforestation. As a result, the rivers burst their banks more frequently and not only as a result of hurricane rainfall.

Nowadays, communities such as these are no longer self-sufficient in food-crops. Although in recent years (to 1981) some land has been returned, the best land has been retained for sugar cane. Some land now used for food crops is that which is prone to flooding and therefore not suitable for sugar cane. This is now marginal land, not only in a physical sense because it is on the littoral edges, but also economically, because it cannot be relied upon to produce harvests, which may be destroyed in flooding. Basic food supplies have now to be brought in from outside the area, causing these communities to be dependent upon external sources – which may at times themselves be unreliable...

Those who were removed, or who migrated from the area, were obliged in many cases to move out of the level valleys that had been taken over for sugar cane and to migrate either to urban areas or to previously uncultivated hillsides. This process...has been the cause of over-farming and erosion of hillsides and consequent silting of river beds...(and)...large numbers migrated to urban areas in search of work.

Urban shanty settlements

In Santo Domingo, the national capital, there are two principal areas of shanty settlement; one on the low-lying land along the Ozama river and the other on steep ravines on the northern edge of the city.

At times of hurricane, these shanty settlements are the cause of considerable problems for the government, since inhabitants have to be evacuated each time so as to avoid heavy loss of life. In 1980, heavy rains threatened to wash houses into the gullies, but there was a noticeable lack of comprehension as to how and why these communities came to be where they are. The administration that deals with the shanty dwellers on these occasions, does so only at the level of cyclone preparedness, and does so because that is the limit of its capabilities as well as of its comprehension. As a branch of government it is not part of a developmental sector that might recognise the causes of the growth of migration to shanty towns, and have the powers and resources to implement relocation and/or rehousing and to create employment opportunities.

There are similar “shanty towns” adjacent to thousands of cities, on ravines, hillsides and dry river beds, and all of them are known to be highly vulnerable. What is important, however, is for the reasons of their occupations to be known and understood so that governments may undertake measures other than evacuation and humanitarian assistance.

Understanding of these processes reveals people to be not only the victims of hurricanes and floods, but also as social groups and populations with a potential that, in the past, has been removed or restricted. Restrictions have the effect of limiting the capacity of a population for activities in support of its own self-reliance, and of limiting resources and power to make and to implement decisions. Though they may often appear to be...the fault of those who have been restricted, most restrictions of this kind will have been imposed for the socio- economic betterment and protection of others.

Jeffery, Susan E (1982) *The creation of vulnerability to natural disaster: Case studies from the Dominican Republic* Disasters 6:1 pp38-43. London.

Lewis, James (1999) Development in Disaster-prone Places IT Publications (Practical Action) London. pp27-29.

Lewis, James (2009) *An Island Characteristic: Derivative vulnerabilities to indigenous and exogenous hazards* Shima (forthcoming).

Germany

Recent widespread building on river flood plains across central Europe, are alleged to have been a significant cause of flood losses in 2002. Former wetlands had been drained to provide more sites and rivers with high embankments “channelled” to reduce meanders, inducing sudden surges where in the past floodwaters would have been delayed for weeks across the plains. “Greedy mayors” are blamed for destroying forests to provide building land for “holiday homes on the banks of rivers” and enticing their own populations onto the plains.

New Scientist (2002) *European floods linked to poor land management* Fred Pierce 21 August http://environment.newscientist.com/article.ns?id=dn2696&print=true (accessed 4 January 2008).

Lewis, James (1999) Development in Disaster-prone Places IT Publications (Practical Action) London. p27.

Indonesia

During the El Niño drought in 1997-98, fires devastated Indonesia’s forests, creating a vast shroud of smoke that reached as far as mainland Southeast Asia. The Indonesian government, international donors, environmental activists and local communities interpreted the causes of the fire differently, and therefore, their solutions to respond to the fires also varied. The majority of the Indonesian government officials blamed El Niño and global warming – caused by industrialization in the First World - for the disaster. They saw fires as a result of unpredictable and uncontrollable nature, and insufficient development to suggest that if the government had more modern technology, it could predict nature more precisely and respond more quickly. Government, therefore, emphasized the need for better technology to predict, monitor and address fires. This interpretation of the fires was blind to human factors causing the fire, and lacked the political will to address these...

...While the rest of the world focused on the smoke visible from satellites, on the ground farmers endured the hardship caused by the fires. They lost both their gardens and fallback resources. The fire had destroyed everything, including their life savings invested in the landscape. Farmers blamed the land clearing activities of adjacent oil palm plantations for the fires. They even believed they were victims of arson, a means employed by plantation

owners to displace farmers from their land in order to stake claims to locally-held lands. In cases where timber or oil palm plantations caught fire, the owners could not count on local help to extinguish the flames, indicating that the roots of the disaster lie with struggles over ownership of land and forest resources. It is not poverty or the 'slash and burn' practices of poor farmers that set the degradation of nature in motion, but the greedy and unjust behaviour of concessionaires, politicians, and law enforcement officers involved in the conversion of forests to plantations. This created the vulnerable ecological and social conditions for the fire disaster.

Harwell, E.E. (2000) *Interpretation of the 1997-98 fires in Indonesia and its consequence for disaster response* Remote Sensibilities: Discourses of Technology and the Making of Indonesia's Natural Disaster in: Development & Change. Vol 31 (2000). pp307-340.

Heijmans, Annelies (2001) *'Vulnerability': a matter of perception* Working Paper No 4. Benfield Greig Hazard Research Centre, University College of London http://www.benfieldhrc.org/activities/wpdsm.htm

Italy

Since 1905, 115,324 people have been killed in 28 earthquakes, in which 3,749 people were injured and 197,300 were made homeless; the total estimated cost of damage has been US$ 30,484 million. All of the four mafias are based in the south, where incomes and standards of living are generally lower, illiteracy higher, and earthquakes are larger and more numerous than in other parts of the country. Large-scale land reforms were instituted in 1946, much later than in the prosperous north. In 1950, the *Cassa per il Mezzogiorno* (Fund for the South) was initiated by central government to stimulate social and economic development. From this and other development initiatives, billions of dollars intended by the Italian and United States governments, the World Bank, and the European Commission as development support have "disappeared". As a result, it has become impossible to separate the mafia from political corruption in this region of Italy.

In Avellino, east of Naples, a maternity wing of a then recently built six-storey hospital collapsed, killing most of its occupants. Subsequent investigation indicated that drawings and specifications had been adequate but that "substantial economies", involving foundations to inadequate depths and serious omissions in reinforced concrete structure, had been made by contractors during construction in which inspection had been absent or ineffective. Similar inadequacies were revealed in the wreckage of many other modern buildings that failed to withstand earthquake motion in an area known to be earthquake-prone.

In public works construction in which collusion between levels of administration, elected officials, bureaucrats and private contractors is regarded as endemic, it has been observed that for the abuse of public office for personal gain to persist country-wide, elected officials are necessarily and regularly involved. Extensive and persistent corruption in public works, or any other sector, cannot be regarded as a phenomenon isolated from its broader political environment, and that in such political environ-ments corruption involves a non-benevolent principal rather than bureaucratic or institutional slippage from a benevolent one. Revealed as intended and premeditated is the extent and enormous scale throughout Italy, of criminal fraud and corruption in the management of public works construction. In 2005, public works infrastructure was declining in spite of declared national policy to achieve the contrary. This

comparison of built infrastructure values against government public works expenditure per region, shows southern Italy as having received more public works finance over the years, even though it has less infrastructure, with the most corrupt region spending four times more per infra-structure unit than the least corrupt. The difference is interpreted as a measure of corruption: the regions that did not get what was paid for are those where politicians and bureaucrats were siphoning-off public money during the construction process.

In contexts of this kind, where endemic criminal fraud and embezzlement have become entrenched, almost traditional and in some areas a tourist attraction, it would be difficult for any relatively small-scale building contractor to behave honestly - if after paying his backhanders, such a contractor could afford to do so...

...Social and economic disadvantagement increases by province from the north to the south of Italy, as does earthquake activity and the collapse it triggers of hospitals, schools and dwellings. Investment in infrastructure, by province, has been shown to decrease similarly in spite of its financial provision over many years from international sources having been the greater. Inherent and pervasive corrupt practices are inferred by the authors as have been responsible since at least 1945, for the "disappearance" of vast amounts of financial input. Italy's southern communities, the most vulnerable to earthquake incidence, have been deprived for more than 60 years of a more secure quality of life. In Italy, what can community resilience achieve against pervasive corrupt criminality entrenched within the same communities ?

Golden, Miriam & Picci, Lucio (2005*) Corruption and the Management of Public Works in Italy* Version 2.1 http://didattica.spbo.unibo.it/picci/elgar2006.pdf (*also published as: Proposals for a new measure of corruption, illustrated with Italian data* Economics and Politics 17/1 pp37-75 March. Blackwell. Oxford http://didattica.spbo.unibo.it/picci/article.pdf) (*accessed October 2006*).

Lewis, James (2008) *Worm in the bud: Corruption, construction and catastrophe* Chapter 12 in Hazards and the Built Environment (Lee Bosher: Ed) Taylor& Francis 2008 pp 243-245.

Lewis, James (2008) *Corruption and earthquake destruction: Observations on events in Turkey, Italy and China* (*revised September 2008*) http://www.radixonline.org/latest.htm

Lewis, James & Kelman, Ilan (2008) *Places, people and perpetuity: Community capacities in ecologies of catastrophe* (unpublished manuscript).

Martinique

After its European discovery by Columbus in 1502, Martinique remained uncolonised until 1635 when French forces defeated the indigenous Caribs and drove them to the island's Atlantic side, increasing their exposure to storms and hurricanes. Seventeenth century maps show a formal division of the island with a *terre des Français* to the west, with its sheltered harbours, and a *terre des sauvages* to the east. Later, all Caribs were expelled, slaves being imported to work on land thus appropriated. Greatest exposure and vulnerability to storms continues for today's inhabitants of eastern Martinique.

In one region of Martinique, where large areas of land continue to be owned by descendents of the early French settlers, an "extremely unequal distribution of landholding" has resulted where more than 90 per cent (1,244 ha) belongs to six of those owners, the remaining 60

hectares being divided among 221 other owners. The “monopoly of key resources” held by this “elite group” created additional vulnerabilities “for waged labour in the north of Martinique”, vulnerability of small landholders to storms and hurricanes being proportionally greater than that sustained by larger landholdings.

Jeffery, Susan E (1981) *The creation of vulnerable populations* Project for Natural Disaster Vulnerability Analysis, Centre for Development Studies, University of Bath. Unpublished manuscript in the author’s possession (for copied text in Island Vulnerability Resources see: http://www.islandvulnerability.org/resources.html *accessed November 2007*).

Lewis, James (1999) Development in Disaster-prone Places IT Publications (Practical Action) London. p27.

Lewis, James (2009) *An Island Characteristic: Derivative vulnerabilities to indigenous and exogenous hazards* Shima (forthcoming).

Nepal

In my studies of a few villages of Nepal, I found that vulnerability is a political issue. Culture is a response to politics. Before we talk about preparedness or coping mechanisms that cultures have adopted in different temporal and spatial settings, I think, it is necessary to address the root causes of vulnerabilities.

Studies have shown over and over again that the people from marginalized and poor communities are more vulnerable to disaster than the people who have better access to the State mechanism.

In the Dhadhing district of Nepal, ethnic groups like Chepangs live in very steep lands. In the popular discourse, it is said that they live there because of their cultural setup, as studies have shown that they are very adaptive to those settings. But it is the policies of institution-alized discrimination, which has extended over about eight hundred years, that has forced them to live in steep slopes. They have adapted pretty well to those harsh conditions (as they are excellent honey extractors and have immense knowledge of local herbs) but that does not mean they are completely safe. Food insecurity and poverty still haunt them and they are the first victims of hazards like landslides. They are living in the edge of ulnerability, not because of their cultural inclination but because of institutionalized discrimination against them.

Nripal Adhikary, Co-director, Adobe and Bamboo Research Institute, Nepal Mountain Forum Global E-conference on Culture and Risk: Understanding the Socio-Cultural Settings that Influence Risk from Natural Hazards ICIMOD /SIDA 2008 Moderator: Ken Hewitt. Theme 1: The role of socio-cultural settings in influencing peoples’ capacities to deal with risk from natural hazards and to adopt or reject modern safety measures car@mtnforum.org

Pakistan

Power, and the institutional relations that lead to its concentration in a few hands, is the major structural contributor to vulnerability…to flood hazard… Entitlement relations that skew access to productive land and agricultural inputs, as well as the political economy that makes the farmers subservient to the needs of the broader cash-driven national and international economic system, are the other two structural causes of vulnerability…In short, the same factors that contribute to inequitable and unsustainable development at the

national scale also contribute to vulnerability of communities and individuals to flood hazard at the local level.

Analyses of flood hazard and response to them should not limit themselves to controlling the physical risk or analysis of organizational and individual perceptions and behaviour. Human and social psychology may have important insights to offer, but the neglect of the accumulative social structures across various scales would render any hazards analysis incomplete at best…The project ahead of us for hazards mitigation is not just building stronger levees or more powerful weather satellites, but equity and justice in resource management.

Analysis of vulnerability to flooding in five communities of the Jhang and Khanewal districts of Punjab province
Mustafa, Daanish (1998) *Structural Causes of Vulnerability to Flood Hazard in Pakistan* Economic Geography 74/3 pp289-305.

Philippines

Another concern for local communities, and perceived as more disastrous than natural hazards, are the government's 'development' projects like dams for electricity generation and irrigation, mining operations, plantations and recreation areas that require conversion of prime agricultural land to industrial and commercial uses. These projects might favor national and global interests; local communities, however, are not consulted, but get displaced, losing their livelihoods and rights to cultivate (ancestral) landsi. The San Roque Multi-Purpose Dam Project, currently under construction in Benguet Province, Philippines, will displace 61,700 individuals. These kinds of projects with immediate negative effects on local poor communities are referred to as *'development aggression'*, and are considered by local people as human-made disasters. It is much more difficult to cope with the adverse effects of *'development aggression'* than with those of a typhoon; typhoons destroy crops, houses and infrastructure, but do not necessarily undermine the basis of people's means of survival. Displacement, as a result of 'development aggression', deprives people of their land which is the most crucial resource to sustain their livelihood. Government or private investors offer compensation that is far below the amount needed to rebuild a livelihood elsewhere, and land is not made available.

Heijmans, Annelies (2001) *'Vulnerability': a matter of perception* Working Paper No 4. Benfield Greig Hazard Research Centre, University College of London http://www.benfieldhrc.org/activities/wpdsm.htm
.

Note 1: In China, before the 1970 and 2008 earthquakes, and the Three Gorges Dam project on the Yangtse River, over three decades (1959-1989), the number of people displaced by water projects for conservation (alone) exceeded 10 million.

Note 2: In India, during the past four decades (preceding 1996), 18.5 million people were displaced by projects for dams, mines, industries and wildlife reserves. Seventy-five percent of those people had not been "rehabilitated".

Cernea, Michael M (1996) *Bridging the Research Divide: Studying refugees and development oustees* World Bank Reprint Series No 481. Washington DC.

Lewis, James (1999) Development in Disaster-prone Places IT Publications (Practical Action) London. p27.

Tonga

The Kingdom of Tonga is an archipelago in the South Pacific of more than 500 miles in extent. Three principal island groups of Vava'u, Ha'apai and Tongatapu extend for more than 300 miles. In addition to earthquakes and volcanic eruptions there have been more than 30 hurricanes in the past 100 years (at Sept 1988).

In the 24 hours of 3 March 1982, Hurricane Isaac destroyed more than a fifth of Tonga's national housing stock. As it traversed in turn the three principal island groups of the archipelago, some islands may have lost all of their houses. In half of the villages of the Ha'apai sub-group, 70% of houses were destroyed. On Tongatapu, the largest island, the hurricane coincided with high tide and caused similarly high losses to housing built on land at or below sea level. On 'Uiha island, the sea swept through the village carrying with it houses, animals, trees and debris. National total damage was assessed as equivalent to US$20 million, of which 40% was of destroyed buildings, two thirds of which were houses.

Special post-cyclone-Isaac assistance to Tonga amounted to one fifth of the total damage cost – by far the greatest proportion being born nationally. In June 1983, a jointly funded rehousing programme was well established and more than half of accepted applications for new houses had been met or were in hand. By the end of 1986, "the whole task of building new houses" had been completed, organised and managed by the Tongan authorities and the UK Building Research Establishment.

Applications for rehousing did not, however, reflect the need for rehousing. Of the cost of each house at T$2,900, applicants were required to contribute on quarter, being T$700. Families ineligible for bank loans, without access to remittances from overseas, or unemployed, sick or elderly, were unable to contribute this amount and thus were not acceptable as applicants. In 1983, it had become apparent from damage surveys as well as being locally and visibly obvious that many were still in need. At that time, less than half of destroyed dwellings had been replaced.

Financial constraints preclude participation; judgements about affordability obscure social need. In place of the *provision* of houses, would not international financial assistance have been more equitably available through assistance with rebuilding – by which knowledge of improved construction techniques would have become more widespread ? Need exposed by the system now will heavily contribute to vulnerability to the next and subsequent hurricanes.

Lewis, James (1989) *Affordability and participation, need and vulnerability: Post-cyclone rehousing in Tonga* Sixth Inter-schools Conference on Development, University of Sheffield, Centre for Development Planning Studies.

Turkey

During the twentieth century, earthquakes have caused the destruction of almost 650,000 buildings. The August 1999 earthquake in densely populated north-west Turkey affected an area of approximately 72,000 sq kms (28,000 sq miles) and killed more than 17,000 people. Forty-four thousand were injured and 600,000 were made homeless; damage was estimated at US$8.5 million. Another earthquake occurred in the same year. Ninety per cent of casualties of the 1999 earthquakes were mid-rise apartment blocks constructed of reinforced

concrete. Victims of these earthquakes are described as “urban middle class people”, corrupt construction practice being identified as the reason for poor quality building stock.

In 2003, an earthquake in eastern Turkey caused a school dormitory building to collapse in which 85 people lost their lives. It was observed that, as routine practice, government service buildings are built to “template designs”, the same building of each type being replicated “all over the country” for schools and hospitals etc. Done for reasons of economy, design or specification errors are automatically transmitted from location to location; modifications in response to varying seismic risk levels, usually to steel reinforcement, being too easily forgotten or ignored where constructional and administrative integrity is variable or uncertain. “Surely the minor expense in construction costs would more than make up for constantly recurring replacement costs and the accompanying social trauma”.

Ninety-two per cent of Turkey’s overall area is stated as being “at risk of a ground tremor”. Turkey’s first seismic code was issued in 1944, updated in 1975 and again in 1997, but the code underestimates the effects of earthquakes on the majority of building stock. As well, less than 25 per cent of all buildings in Turkey conform to the 1997 code, Turkey having failed to relate earthquake risk with an administration capable of assessing drawings and calculations, visiting buildings under construction, exercising punishments for non-compliance and preventing inadequate structures from being erected.

Extensive earthquake damage in Turkey results from the collapse of inadequately constructed buildings, and buildings in inappropriate places. It is insufficient, however, for state authorities to allocate blame solely to a failed system of building control, allegedly to deflect blame away from facilitation and condonation of corrupt practices within their own management systems.

Lewis, James (2008) *Worm in the bud: Corruption, construction and catastrophe* Chapter 12 in Hazards and the Built Environment (Lee Bosher: Ed) Taylor& Francis 2008 pp 243-245.

Lewis, James (2008) *Corruption and earthquake destruction: Observations on events in Turkey, Italy and China* June 2008 (*revised September 2008*) http://www.radixonline.org/latest.htm

Tuvalu

In the construction of the airfield (on Funafuti) a large portion of the land formerly used for growing *pulaka* and *taro* was covered up. The local people were later compensated yet they suffered an enduring loss. *Pulaka* is no longer a staple food, although during the war it did not matter. The American occupation brought them more food - as well as cigarettes, soap and kerosene - more than they had ever had before. Many still think of that as the best time of their lives...

Indeed, most of the damage done on the island (Nanumea) was done by its defenders. The airfield took up one sixth of the land area, and to make it the Americans destroyed nearly half of the coconut trees, 22,000 out of 54,000. Moreover, efforts to replant that land have not been very successful. The coral is packed too hard for the trees to grow properly.

Telavi, Melei (1983) *War* Chapter 18 in Laracy, H: Tuvalu: A History (1983) Institute of Pacific Studies, University of the South Pacific / Ministry of Social Services, Tuvalu. pp140 & 141.

Lewis, James (2009) *An Island Characteristic: Derivative vulnerabilities to indigenous and exogenous hazards* Shima (forthcoming).

United Kingdom

In the United Kingdom, in March 2008, families in Gloucestershire and Hull whose houses were flooded in July 2007, continued to live in unhealthily overcrowded temporary accommodation (caravans/mobile homes) with the prospect of doing so long into the year. Extraordinary resilience has been displayed by the owners of newly built houses, all with "planning permission" and bought in good faith, against an inexorable hazard made manifest by decisions beyond their influence and about which they could do nothing. Meanwhile, housing construction on "flood-plains" continues against specialist advice to central and local governments.

Lewis, James & Kelman, Ilan (2008) *Places, people and perpetuity: Community capacities in ecologies of catastrophe* (unpublished manuscript).

Refugee groups become the most vulnerable

"Vulnerabilised citizenship" has been identified as combinations of vulnerability and citizens' rights. A "new apartheid" is suffered by asylum seekers in the United Kingdom through exclusion, threatened deportation and exploitation, adding "a new layer of vulnerability to that experienced…in the places from which they fled". Additionally, asylum seekers are reported as having been dispersed to socially dangerous parts of the United Kingdom. Recognized as a shortcoming of citizenship, those now identified as demographically vulnerable may be environmentally vulnerable as well.

Hogan, Daniel Joseph & Marandola Jr, Eduardo (2005) *Towards an Interdisciplinary Conceptualisation of Vulnerability* Population, Place and Space 11. 455-471. Wiley Interscience.

The Guardian *(2007) Warning on shifting asylum seekers to dangerous areas is revealed* Alan Travis The Guardian 16 March. http://www.guardian.co.uk/society/2007/mar/16/asylum.immigrationasylumandrefugees *(accessed November 2007).*

USA

In August 2005 (in New Orleans), during hurricane Katrina and its aftermath, the worst flooded area of "Central City" was, at twelve thousand people per square mile, the city's largest population density and, on the site of a former lake, at 1.5 metres below sea level. That the majority of inhabitants were of lowest incomes and black, thereby being an ethnic minority with a long history of being disadvantaged in the USA, added to an already rich melting pot of vulnerability in which politico-socio-economic forces had obliged dis-advantaged communities to occupy the most vulnerable areas of a vulnerable city. This kind of information was available before hurricane Katrina on 29 August 2005 and similar data have been confirmed since. The vulnerability of lowest income communities occupying areas of lowest ground elevation, was compounded by inadequate flood protection, constructional failure of levees, and removal or destruction of protective wetlands. In hurricane-prone

contexts of known extreme vulnerability to flooding, the consequences could not have been unanticipated by authorities or inhabitants.

In New Orleans, following hurricane Katrina, some inhabitants have demonstrated resilience by self-build reconstruction of dwellings on the same sites, but community resilience was powerless against long-term governmental neglect and social and political forces creating a New Orleans society based on race and social class

Van Heerden, Ivot L (2004) *Coastal Land Loss: Hurricanes and New Orleans* CD Hurricane Pam Exercise – July 2004: ADCIRC Storm Surge Animations and Related Information Baton Rouge. Centre for the Study of Public Health Impacts of Hurricanes, Louisiana State University. http://www.publichealth.hurricane.lsu.edu/Adobe%20files%20for%20webpage/Coastal%20Land%20Loss%-%20Hurricanes%20and%20New%20Orleans.pdf

New Orleans Community Data Center (2005) *The New Orleans Index* http://www.gnocdc.org/impact.html (*accessed November 2007*).

Logan, John R (2007) *The Impact of Katrina: Race and Class in Storm-Damaged Neighborhoods* http://www.s4.brown.edu/Katrina/report.pdf (*accessed November 2007*).

Lewis, James & Kelman, Ilan (2008) *Places, people and perpetuity: Community capacities in ecologies of catastrophe* (unpublished manuscript).