

# Disaster Management: From Theory to Implementation

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**ABSTRACT:** *This paper reviews contemporary trends in the management of the crisis phase of disasters. It charts the recent history of emergency preparedness in the light of a basic distinction between civil defence and civil protection. As the former has metamorphosed into homeland security and the latter into civil contingencies management, so a distinction has grown between devolved and centralized management of disasters. This has been accompanied by differences in the strategies employed to bring relief to stricken populations, including the extent to which military and paramilitary forces are involved. The question of devolved versus centralized emergency management is considered in the light of its impact on welfare. The paper then reviews some aspects of the management of Hurricane Katrina in New Orleans in August-September 2005. It seems reasonable to conclude that symbolic aspects of the media and political response tended to provide impetus to discrimination in the provision of aid. In economic terms, disaster involves a complex process of negotiating for resources, in which the marginalized sections of society are almost automatically disadvantaged. The solution lies in making emergency preparedness more democratic, which is a major challenge for the present century. The article ends by establishing ten principles for fair and democratic civil protection.*

**Keywords:** Emergency planning; Disaster management; Hurricane Katrina

## 1. Introduction

On 25<sup>th</sup> December 1972, an earthquake of moderate power and shallow focus situated under Lake Managua devastated large parts of Nicaragua's capital city. Of the population of 405,000 people, 4000 were killed, 16,000 were injured, 200,000 were rendered jobless and 280,000 became homeless [1]. As was expected in the second poorest country of the western hemisphere, most of the victims were poor and landless. With access to capital and insurance, the small cohort of middle- and upper-class survivors rebuilt their homes and businesses in no more than six months. In contrast, a good many of the poorest victims never acquired the resources to rebuild [2]. The Managua earthquake was neither the first nor the last of what Blaikie et al [3] termed a "classquake". On the other side of the great wealth divide of the Americas, the differential effects of disaster are equally visible in the impact of

Hurricane Katrina on New Orleans in 2005 [4].

Questions of equity and access to resources can be raised about any of the phases of the disaster cycle: risk reduction (disaster mitigation), preparation, emergency management, recovery and reconstruction<sup>1</sup>. While recognizing the importance of social justice in the other phases [5], this article will concentrate on the issue of fair access to resources and services during the emergency phase of sudden-impact disasters. Specifically, the paper will:

- ❖ Examine the origins and growth of modern emergency preparedness, with emphasis on their implications for social justice and the apportion-

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1. As the phases are not necessarily strictly sequential, people may be disadvantaged simultaneously in a variety of ways, for example by lacking access to resources needed to face both the emergency and the long-term aftermath.

ment of resources (the aim here is to explain how the present situation arose and what current trends might signify);

- ❖ Consider some of the shortcomings of the response to Hurricane Katrina in terms of the implications for the further development of emergency response in the international arena;
- ❖ Suggest some principles for the fair and healthy development of emergency preparedness.

Governments have a moral duty, and usually also a legal and constitutional one, to protect their citizens against foreseeable sources of harm [6]. Thus society has acquired a complex set of laws, regulations, codes, norms, protocols, and regulatory bodies and agencies charged with the application of these instruments. The parts of this arrangement that relate to disaster prevention and response make up a system that is variously known as emergency preparedness, disaster management, emergency response or civil protection [7]. Its history varies from country to country in line with the political system, type of state, dominant hazards, and--often--ideological considerations that affect public administration [8]. One of the most common and significant differences between systems in different countries is that what works in a federal republic is not likely to be perfectly transferable to a unitary nation-state in which there are different divisions of legislative powers and sovereignty. Thus in many cases it is difficult to make emergency preparedness compatible between neighbouring countries; for example, the 25 national systems of the European Union vary between federal and unitary states, republics and constitutional monarchies, and centrist and devolved administrations [9]. Differences are also evident between the levels of commitment and preparedness among the various US states and Canadian provinces [10-11].

Despite the heterogeneity of disaster management arrangements around the world, there are some common themes and they are of particular relevance to the question of equity. The next section will trace the emergence of broad trends in emergency preparedness and consider them in terms of their implications for protecting society's most vulnerable members.

## 2. The Origins of Modern Disaster Preparedness

In recent decades there has been a gradual separation

between civil defence and civil protection<sup>2</sup> [12]. The former has military or paramilitary origins and was created in order to protect civilian populations against armed aggression by a foreign power. The latter, which evolved 40-50 years later than civil defence, was devised to protect citizens against natural and technological disasters.

Modern civil defence has several progenitors. Prototype arrangements were made to protect the civilian inhabitants of large cities under threat during the First World War, possibly even during the American Civil War. No doubt there were many antecedents in the sieges and military campaigns of the more distant past. However, the clearest example of a prototype civil defence organisation emerged, somewhat spontaneously, during the aerial bombardment of Guernica in 1937 in the Spanish Civil War. When many European and Asian cities were subject to intense aerial bombardment during the Second World War, arrangements quickly became more widespread, universal and highly organized [13].

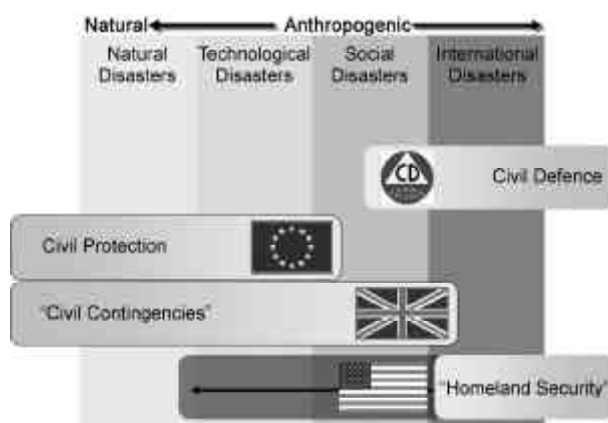
Civil defence based on air raid precautions (*ARP*) gradually metamorphosed into a system intended to protect people and their governments against a possible thermonuclear bombardment. In reality, the consequences of nuclear war are both devastating and difficult to imagine. Hence the arrangements tended to be based on incomplete scenarios. There was little sense of continuity in terms of what would happen when people emerged from underground bunkers into a post-nuclear world, or perhaps a nuclear winter, in which life-support systems had collapsed. In any case, opportunities to protect the general public were extremely limited. Probably only Switzerland came any where near to achieving the goal of democratic access to radiation shelters: most other countries, and especially the poorer ones, would only have sheltered a tiny group of elite personnel, and in the event of a war the general public would have been left to fend for itself [14].

Hence, whereas *ARP* was generally broadly based, the civil defence arrangements of the Cold War were highly discriminatory. Restricted privileges were complemented by highly draconian forms of command and control, many of which were present in the arrangements for coping with natural disasters

2. For the sake of consistency and clarity, I am using the European terms, which are widely accepted elsewhere in the world, particularly in Russia, Canada and Latin America [17]. Their relationship to emergency preparedness and homeland security, partial synonyms in the USA, will be discussed forthwith.

[15]. Secrecy was paramount and, although it may have helped deny intelligence to hostile foreign powers, it also served to protect government officials against recrimination for their sins of omission or commission. Given that it was physically, logistically and financially impossible to protect whole populations against nuclear war, the emphasis shifted to protection certain groups--VIPs, political leaders and key government personnel--against the perceived threat [16]. In their most developed form, such arrangement could have been used to protect political leaders against the democratic rights of their own populations, or for various other abuses of power<sup>3</sup>.

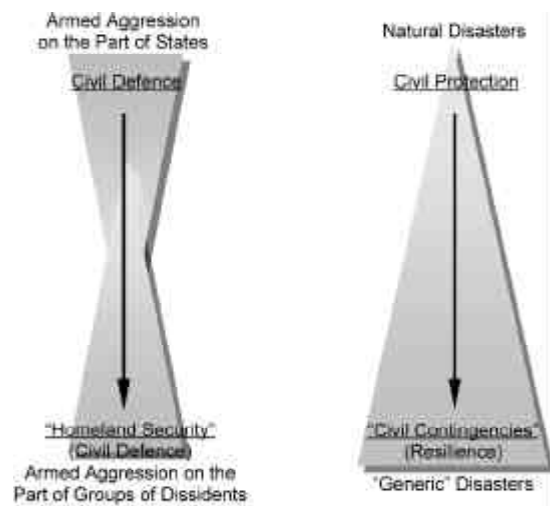
By the 1970s civil defence had become an increasingly inefficient mechanism for tackling disasters, especially large natural catastrophes. It was excessively centralized, rigid and poorly adapted to the rigors of natural disaster response<sup>4</sup>. Gradually, under the duress of repeated natural disaster, a new system emerged, see Figure (1) [12]. Civil protection is amenable to development at the "grass roots" level of communities, neighbourhoods or local authorities [18]. It recognizes that the local area is the "theatre of operations" when disaster strikes. However, it is not exactly a "bottom-up" form of organisation, in that guidelines are needed from higher echelons of government, preferably originating at the national level [19]. To a certain extent the growth of civil protection has been coeval with the relative decline of civil defence, though its reinvention in the form of homeland security has yet to determine a new status for civil



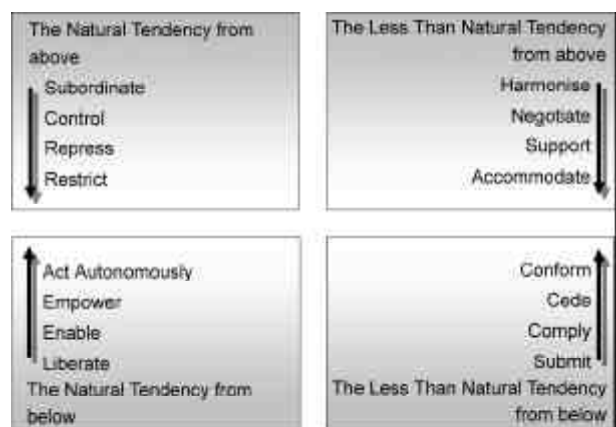
**Figure 1.** The origins of civil protection are different from those of civil defence. Through its counterpart civil contingencies management, as developed in the UK, it tends to have a wider brief than the modern reincarnation of civil defence, homeland security, though circumstances dictate that the latter is forced to confront a broad range of crises.

defence or its potentially broader development, civil contingencies management, see Figure (2).

Given the growing imperative of large disasters, civil protection has been relatively slow to develop. In part this reflects the universal tension between centralized and devolved government, see Figure (3). A good civil protection system involves arrangements for tackling emergency situations that are harmonized across a wide variety of political units at various levels within a particular nation, but that are simultaneously adaptable to specific local needs--and



**Figure 2.** Parallel metamorphoses of civil defence and civil protection.



**Figure 3.** Tendencies and counter-tendencies in the relationship between central and local or devolved governments.

3. In the 1960s several western European states were close to coups d'état, though in each case the news was suppressed for years or decades.
4. According to Beresford [22], organized civil defense in the USA began as a local, civilian responsibility and became a national one as it was militarized during the Cold War.

of course sensitive to the needs of the most vulnerable sections of the community [20]. The next section will examine the question of how disaster management powers are apportioned between different levels of government.

### 3. The Tension Between Centrism and Devolution

A consistent theme in the emergency preparedness activities of government--indeed in most aspects of civil administration--is the tension that arises between central control and devolution. The balance between these two opposing tendencies varies considerably from one country to another and in many cases also over time with the evolution of the political process. It also tends to vary with the prevailing system of emergency management, see Figure (4). For example, public administration in France is strongly centrist, with power vested in the prefectures as representatives of the national state in the regional Departments [21], while federal nations allow varying degrees of autonomy to be held by their constituent states [10]. The centrist-devolution dichotomy has profound implications for emergency preparedness.

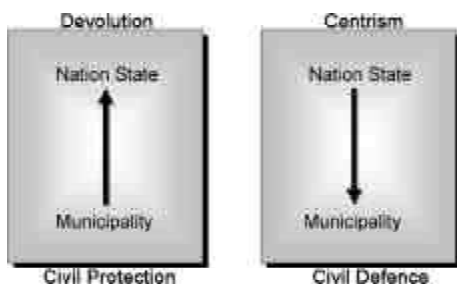


Figure 4. Influence of devolution and centrism on the basic form of emergency preparedness at the national level.

The dictates of intelligence gathering, counter-terrorism policy and military participation ensure that civil defence is usually a highly centrist function. It thus tends to reinforce the tendency to manage major emergencies from the leading seat of government. Moreover, participation in counter-terrorist activity by civil protection forces is necessarily limited, see Figure (5). However, there are several reasons why this strategy is inefficient and risky. To begin with, the local authority area is usually the “theatre of operations” when disaster occurs. It is very easy for incomprehension to creep in when experience and problems on the ground have to be matched with orders from a distant



Figure 5. Role of civil protection in counter-terrorism planning and operations.

seat of government [23]. Secondly, disaster response really requires the support of its beneficiaries, and that can best be achieved by making them active stakeholders in security management, not mere passive beneficiaries [24]. Thirdly, when disaster strikes, local knowledge, expertise and resources should not be supplanted by imported assistance, which is usually relatively slow to arrive, often insufficient or inappropriate and seldom a match for what can be generated locally if communities and local administrations are supported in their fight against disaster [25]. Fourthly, failure to strengthen the local response is likely to have negative repercussions for the ability of communities to recover effectively from disaster, especially where careful co-ordination and substantial resources are required [26].

Some of these organisational questions are well illustrated and can be seen in the response to Hurricane Katrina, as the next section illustrates.

### 4. Hurricane Katrina and the Protection of the Poor

As most Americans are only too well aware, two recent events have revolutionized--or at least galvanized--U.S. emergency preparedness: the terrorist attacks of September 11, 2001 [27], and the impact of Hurricane Katrina on the Gulf of Mexico coastline on September 29-31, 2005. They were, of course, radically different catastrophes. The first had immediate emergency management implications that stretched around the world [28]. It stimulated the largest reorganisation of the US Federal government for almost 55 years and established homeland

security as a national strategic priority<sup>5</sup>. The resulting configuration of 150 federal agencies may have been adequate to face the terrorist threat, but faced with a large natural disaster it collapsed into what one researcher has called a “bureaucratic nightmare” [29] and another described as “the worst mishandled disaster I've ever seen in my life, and I've been studying disasters since 1949” [30].

With the benefit of hindsight, the balance sheet for Hurricane Katrina is roughly as follows:

- ❖ A well-developed system designed to forecast hurricane landfall timing and position had little effect on actual emergency management,
- ❖ Scenarios had been written that accurately predicted the effects if a hurricane were to make landfall at New Orleans, including estimation of emergency management needs [31], but they had not had sufficient impact on disaster preparedness,
- ❖ Structural protection of large urban areas was patently inadequate [32],
- ❖ Evacuation needs were underestimated and operations were badly organized,
- ❖ Shelter requirements were underestimated and shelter was structurally inadequate, especially at the Superdome, where an estimated 20,000 people sought refuge,
- ❖ Some breakdown in law and order occurred, though it is difficult in the welter of mass media exaggeration and distortion to ascertain to what extent violence and anarchy actually prevailed [30],
- ❖ Relief operations were poorly co-ordinated, with distinct hiatuses between the actions of various levels of government and jurisdictions<sup>6</sup>,
- ❖ Imported assistance was badly managed and inefficiently used, and
- ❖ Fraud was allegedly widespread in the handling and use of relief goods and money.

Wealthy, mobile people with adequate financial resources fared relatively well; the poor and handicapped and people without cars fared badly. This was also a geographical problem of discrimination between rich, well-connected neighbourhoods and poor, vulnerable ones [4]. One could argue that the same processes of social differentiation and marginalisation were at work as had been present in Managua 33 years previously. Tierney [33] saw the neglect of the poor of New Orleans and the anarchy that prevailed when they were left to their

own devices as indicative of the fact that “intergovernmental institutions [in the USA] are wholly incapable to responding to the needs of diverse publics during disasters”. In a negative sense this observation is probably untrue, as the following section seeks to demonstrate.

## 5. The Value--and Perils--of a Symbolic Interpretation

The disaster movie as a genre likes to portray major emergencies as events that cause the breakdown of civil society and the emergence of the egotistical savage that is presumed to be latent in each of us [34]. The aftermath of Hurricane Katrina was no exception [35]. In the end, the situation is supposedly saved by the forces of altruism in this straight battle between 'villains' and emergent 'heroes'. Such a grotesquely black and white interpretation of human behaviour is greatly at odds with the kinds of 'therapeutic community' that sociologists have identified time and time again in disaster situations [36]. However, it has gained symbolic significance to the extent of becoming almost a self-fulfilling hypothesis: the mass media frequently prefer the Hollywood version of disaster to the more sober, objective one presented by the sociologists. The following quotations from news bulletins issued on September 1, 2005, illustrate the media's addiction to “breakdown of society” scenarios:

- ❖ Looters rampaged through flooded streets and survivors scrambled to get out on Thursday as shell-shocked officials tried to regain control of the historic jazz city reduced to ruin by Hurricane Katrina”. [Reuters]
- ❖ Some 4,000 National Guard troops fought an uphill battle to restore order to the largely submerged jazz Mecca plagued by gun-battles, fist-fights, gangs of roving thugs, looters and carjackers. Residents reported survivors dropping dead in shelters or gunned down outside the local convention centre. Hospitals were evacuated after power ran out and helicopters ferrying patients and babies drew gunfire. "This is a war zone," said Melissa Murray, 32, a Louisiana

5. Beresford [22] noted that the term "homeland security" had been used by the Federal government since 1998. However, not until four years later did it become premium currency.

6. In the words of Bier [29]: "many of the problems in the aftermath of Katrina were not due to any one person or organisation, but rather were problems of coordination at the interfaces between multiple organisations and multiple levels of government" (p. 253).

state corrections officer helping in the relief effort.” [AFP]

- ❖ Gunshots were reportedly ringing out and fires flaring around New Orleans last night as looters broke into stores, houses, hospitals and office buildings - some in search of food, others looking for anything of value.” [CNN]

Whether or not looting, sniping, theft, violence, rape and other forms of anti-social behaviour were a significant element in the reaction to Hurricane Katrina, they were a policy gift to the new cold warriors [37]. Although later reports led to some rewriting of the script in favour of a more objective, sober interpretation, there is no doubt that considerable anarchy reigned (and it was not restricted to the public, as field reports of police behaviour include some bizarre stories). But it was centred on the poor. In the words of Tierney [33]: “If current trends continue, disaster victims will increasingly be seen as 'problem populations' requiring strict social control, and immigrants and minority group members will feel even more marginalized and fearful” (p.119).

There are various possible combinations of forces in disaster management, with configurations that are either more or less reliant on military support [38]. The tendency over the last half-century has been to demilitarize civil emergency operations, particularly in European countries, see Figure (6). Yet Hurricane Katrina was managed--at great expense and with monstrous inefficiency--by a combination of military and paramilitary forces<sup>7</sup>. At the most superficial level this represented a triumph of authority over

anarchy, albeit achieved slowly and laboriously. Delving somewhat deeper, it represented the triumph of authoritarianism over representative local democracy. “Bureaucracy has committed murder here in the greater New Orleans area” as Aaron Broussard, President of Jefferson Parish in the South New Orleans area, famously commented in a television interview during the early aftermath. Though not discussing his own agency’s shortcomings, he produced some precise examples of Federal and state failure to provide support for local actions; indeed, their tendency to hinder them [39].

Mitchell et al [40] taught us to assess the significance of disaster in the light of what else is important at the time it occurs. In 2005, the seriousness with which the terrorism threat was treated led to a considerable momentum in favour of bringing back civil defence at the expense of civil protection. Whereas one might interpret the failure of city-, county- and state-level emergency preparedness as a good reason to strengthen democratic participation in restoring it to effectiveness, the federal response was clearly to supplant local initiatives with those generated far away in the main seats of power [41]. Moreover, a report on Katrina written for the White House and published in February 2006 advocated bringing homeland security directly under the command of the Pentagon [42] (pp. 54, 71)<sup>8</sup>.

Several authors have commented that problems of the kind exemplified by Hurricane Katrina will not go away in the future [32, 45]. In the meantime the terrorism threat has, in effect, scared administrations into swinging the balance back from civil protection to civil defence [12], despite the evident fact that counter-terrorism preparations are quite unsuited to the task of managing a large natural disaster. Moreover, this has occurred despite the fact that between September 11, 2001, and September 11, 2005, there were only five deaths from terrorism in the USA. Nevertheless, vast sums have been spent on preparing for CBRN attacks. Granted that their consequences could be spectacular and that they are

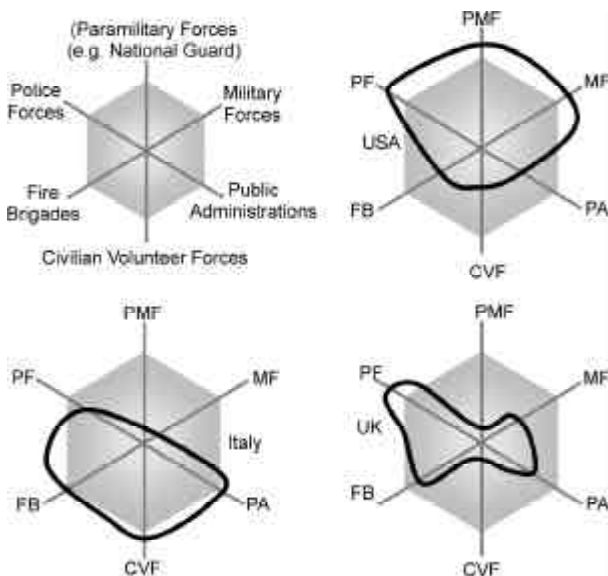


Figure 6. Balance of forces in disaster management, with three national examples.

7. Within a week of Hurricane Katrina 14,200 military personnel and 50,000 National Guard personnel were providing logistical support, search-and-rescue capability and security in the Hurricane Katrina disaster area. However, they suffered from fragmented command and incompatibility of equipment [42].

8. There have, however, been some powerful dissenting voices [43, 44].

at least partly preventable if prior preparedness is sufficient, there have nevertheless been remarkably few CBRN incidents in modern history (and very many natural disasters).

Parker et al [46] noted that the US Federal Emergency Management Agency had strong prior awareness of the hurricane risk to New Orleans but saw Louisiana as “a terminally ill patient”, incapable of preparing itself for the impending event. Perhaps deficiencies in the middle and upper ranks of emergency management are inevitable unless there is a solid base of preparedness at the grass-roots level. This suggests that the questions of welfare and relevance to people's lives need to be made much more central to preparations for catastrophe [47].

### 6. Welfare and Resources for Emergency Preparedness

This section offers some select observations on the question of the extent to which poverty is diagnostic of lack of protection in the emergency phase. Economists have viewed the impact of disaster as a form of accelerated consumption of resources [48-49]. Accordingly, disaster relief and recovery involve replacement of the assets that have been consumed. The balance between the profit function of market capitalism and the welfare function of social assistance is temporarily altered in favour of the latter. However, the relative scarcity of resources for relief, recovery and reconstruction means that these are subject to complex transactions, see Figures (3), (4), (7) and (8). In general, local government negotiates support from regional and national, regional from national, and national from the international community, if appropriate. Faced with



Figure 7. Organisation and resources in disaster.

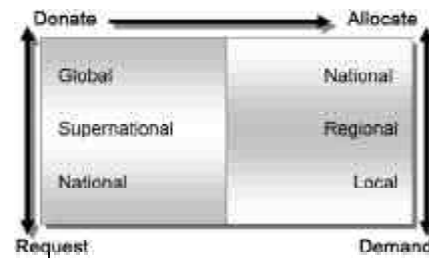


Figure 8. Levels of government and the apportionment of resources for disaster relief.

scarcity relative to demand, higher levels of government must ration resources and apportion them between the competing demands from lower levels, see Figure (8). Local authorities must ensure that resources are fairly distributed among beneficiaries [50]. The degree to which this happens may be a measure both of how effective government is and of how committed it is to the welfare of its citizens. Variations from case to case tend to reflect the following factors [51]:

- ❖ Degree of political connectedness, influence and patronage: communities that are well connected with the national political hierarchy fare best
- ❖ Effect on voting patterns: places containing significant proportions of the electorate are most easily listened to
- ❖ Geographical proximity to the centres of power: not merely actual geographical connectivity (the ease with which communities can be reached in times of crisis), but the perceived remoteness or centrality of places
- ❖ National strategic significance
- ❖ Economic power
- ❖ How vocal citizens' associations are [52].

The question of whether disasters accentuate the division between rich and poor or do something to bridge the gap has frequently been debated [53-54]. The consensus is that temporary patterns of social welfare and solidarity under emergency conditions soon give way to a widening gap as the poor are left behind in the race to rebuild livelihoods and structures [55]. In the worst cases, the plight of the poor is such that the term 'disaster' becomes entirely relative: normal daily life can hardly be distinguished from emergency conditions [56]. Yet poverty and vulnerability are not exact synonyms, however much they tend to go hand in hand. That being stated, disasters must not be used to consolidate power over the poor and disadvantaged [33].

## 7. How These Considerations Relate to Earthquake Disasters

For better or worse, the American genius for clear-sighted organisation has provided a model of emergency preparedness for the rest of the world to assimilate and, where appropriate, follow. For example, the Italian network of emergency support functions, the so-called “Augustus method”, is heavily based on the equivalent system implemented by the US Federal Emergency Management Agency at the time of the Loma Prieta earthquake of 1989 [57]. As a result, in the Hurricane Katrina debacle other nations saw the collapse of a universal model and a series of technical points of reference.

Seismic disasters have the added disadvantage of occurring without immediate warning. Much therefore devolves upon long-term protection. Hence, as the poorer members of society tend to live in buildings that lack anti-seismic provisions and are perhaps badly maintained, or on ground that is unstable, earthquakes pose a direct threat to the balance of equity and welfare. This was amply demonstrated in the field after the Friuli, northeast Italy, earthquakes of 1976 [51] and in California [58]. These and many other examples underline the importance in seismic zones of local preparedness that is community based and that takes account of community-level vulnerability [59]. Unfortunately, microzonation and anti-seismic retrofitting are expensive techniques and are rarely practised in marginalised communities that lack political influence.

These considerations also point to a pressing need to organise communities locally, perhaps at the neighbourhood rather than the city-wide level. If there is insufficient attention from the upper echelons of government, then seismic protection must begin at the lowest levels, however rudimentary it is. In this context it needs to be demonstrated to community leaders that organisation is not necessarily expensive and communication is becoming progressively cheaper. But much depends on the degree of social cohesion, for solid programmes of earthquake defence cannot be created where there is great divisiveness in society, a fact which was amply demonstrated by New Orleans after Hurricane Katrina. In a comparative international analysis of earthquake susceptibility and response, Özerdem and Jacoby [60] demonstrated that the degree of development of civil society institutions is diagnostic of the level of seismic vulnerability reduction. Much groundwork needs to be accomplished in building institutions that are responsive to the security needs

of local people. This cannot be achieved by a remote central government.

## 8. Conclusion: A Manifesto

The hypothesis that disasters tend to reinforce the power structures that create and maintain poverty, disadvantage and marginalisation has been powerfully argued [61-62]. One antidote may be a cogent agenda to empower the excluded groups. Emergency preparedness needs to be made more democratic, or at least its democratic underpinnings need to be defended vigorously. The author of this paper believes that disaster management services should respond to the following ten principles:

1. Civil protection must be a service explicitly provided for the population, not merely for the state in any of its forms.
2. It must be responsive to the security needs manifested and expressed by ordinary people.
3. It must involve people, in a participatory manner, in the maintenance of their own security.
4. It must give priority to satisfying the needs of disadvantaged groups.
5. It must be organized primarily at the local level, while higher levels of government must provide coordination, harmonisation and support but not supplant local crisis response capability.
6. The service must be fully demilitarized and must be as professional as possible.
7. It must involve scenario-based, generic emergency planning, which is designed to reduce the vulnerability and tackle the fundamental needs of the general population of the geographical area in which the plans apply.
8. It must define sustainable emergency management and risk reduction and work towards achieving them.
9. It must be compatible with ecological sustainability and urban and regional planning that pertain to the local area.
10. It must keep the public well informed of any risks and contingencies that may require people to take action.

As principles 4 and 7 indicate, the welfare function of emergency management should not be allowed to decline under the duress of neo-liberal ideology [62]. I believe that making emergency preparedness more participatory and more democratic is the fundamental challenge of the 21st century [63]. This means that significant effort must be devoted to encouraging local preparation, especially among the most vulnerable groups and neighbourhoods in society.



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