The Transformation of Natural Hazards into Social Disasters: Disasters as Unsolved Development Problems

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INTRODUCTION

Natural hazards exist throughout the world and are expressed through extreme geophysical or climatic events. Types of hazards include floods, droughts, earthquakes, tsunamis, tropical cylcones, and volcanic eruptions. Their estimated costs to the global economy are nearly $40 billion a year, of which $25 billion is directed toward recovering damage loss while the remainder goes toward prevention and mitigation. Floods, tropical cylcones, earthquakes, and droughts caused 90% of the worldwide disasters resulting from natural hazards between 1947 and 1973 (Burton, Kates, and White 1978, 2).

Hazards represent the potential for an extreme event to occur and must be viewed as an integral part of the human-environment spectrum because humans inhabit hazardous regions and are thus susceptible to loss of life and property. Without humans, there can be no disaster. Social, economic, and political systems are affected drastically by extreme events and an overall disruption in society results.

Yet the label 'natural disaster' is misleading because humans and their effects on the environment play too large a role for disasters to be called natural (Wijkman and Timberlake 1988; O'Keefe, Westgate, and Wisner 1976). The human-environment spectrum is characterized by four broad and inextricable links between social and class relations, economic and political systems, technological and ecological changes, and the hazard itself. Interactions among the first three links can significantly alter built-in environmental and indigenous systems of adjusting to the earth's organic processes. Structural unevenness

among these three links in underdeveloped regions of the world intensifies their relationship with hazards and creates the conditions for a social disaster. The extreme event magnifies fundamental problems within a society.

Distinguishing between the terms "hazard" and "disaster" is necessary in order to understand the gradual processes that characterize the dynamics of these links and their relationship to each other. It is also useful in establishing the premise that extreme events of natural hazards become transformed into social disasters. The potential magnitude of these events are exacerbated by humans, which has led to disasters being viewed as "Acts of Man (sic)" (Hewitt 1983, 16).

The transformation of natural hazards into social disasters occurs more frequently in underdeveloped nations than in developed nations. Developed nations generally are more financially prosperous, are better prepared to cope with the event itself, and have more structural eveness among the four links. Cuny states that "disaster is more a function of the ability of communities to cope with the events - in terms of social and economic systems and physical structures - than of the phenomena itself" (Cuny, 1983, 16).

Economic losses are highest (monetary value) in developed nations because there is more to lose. Yet the greatest burden of natural hazards falls on underdeveloped nations because they experience higher death tolls and a greater relative economic loss (Hagman 1984, 36). These two aspects make underdeveloped countries more likely to have social disasters resulting from natural hazards.

For example, Tokyo and Managua are both susceptible geologically to

earthquakes. Managua residents, however, are clearly more vulnerable to social disasters than Tokyo residents because relationships among links are intensified by Nicaragua's status as an underdeveloped nation. Japanese society also has more balanced relationships among the links within the human-environment spectrum. In addition, Tokyo has building codes, zoning regulations, and communication systems as measures to cope with the potential for earthquakes. Japan's ability to devise mitigation measures comes from its position as a developed nation with relatively even social, economic, and political structures.

Latin America has experienced scores of extreme geophysical and climatological events and also has a long history of unbalanced relationships among the four links. In recent history, major earthquakes struck Callejón de Huaylas (Perú) in 1970, Managua in 1972, Guatemala City in 1976, Mexico City in 1985, and San Salvador in 1986. A devastating volcanic eruption obliterated Armero (Colombia) in 1985, while late summer hurricanes struck Belize in 1961, Honduras in 1974, the Dominican Republic in 1979, and Nicaragua in 1988. In most of these events, social disasters of varying magnitudes resulted. The transformation did not begin and end with the event itself, but was set in motion by centuries of uneven social, economic, and politcal relationships and was most painfully revealed in the disastorous aftermath of the events.

The purposes of this paper are to identify varying perceptions of hazards and disasters, discuss conditions of the hazard-to-disaster transformation, and to explore the hypothesis that most Third World disasters are actually unsolved development problems. The final and most important purpose is to conceive

approaches that planning can take toward natural hazards so social disasters do not result.

PERCEPTIONS AND DEFINITIONS OF DISASTERS AND HAZARDS

Some perceptions of hazards and disasters are rooted in an empiricist view of nature where "...the power in scientific thought has derived especially from discovering scales and perspectives where phenomenon seem to fall..." (Hewitt 1983, 19). Scientific thought not only provides explanations, but also allows for additional monitoring so that ultimately a perfect understanding of phenomena can be derived. Another perception views 'natural disasters' as 'Acts of God' that punish a community for some terrible deed. Other perceptions see disasters as the extreme situation implicit in the everyday condition of given populations and as a dynamic feature of the human-environment relationship (Susman, O'Keefe, and Wisner 1983, 264).

For most people the notion of disaster is disturbing because of human suffering as well as the loss of life and property involved, while for others disaster violates order and reason that western thought and scientific, positivist rationality has based itself on for centuries. Perceptions of disasters differ and thus no universal definition exists. The only connection between most definitions is that some degree of human involvement and/or suffering must occur. The realities of disasters are the conditions that shape "the pliable processes of human perception and cognition" (Hewitt 1983, 8).

Definitions range from quantifiable to abstract and offer varying

interpretations of the conditions, causes, responses, and effects that constitute a disaster. For example, the Red Cross and the Natural Hazards Research Group at the University of Colorado define disasters only in terms of their impact on people that satisfy at least one of the following conditions: (Wijkman and Timberlake 1988; Susman et al. 1983).

1) At least $1,000,000 (U.S.) in property damage
2) At least 100 dead
3) At least 100 injured

A global survey of disasters between 1947 and 1980 conducted by the London School of Economics defines disaster basically the same way, with the exception of at least $3.6 million (US) in property damage occuring (Hagman 1984). Other definitions include:

> "A situation *generated by natural causes* (italics mine) which are often sudden in onset and which endanger life or the means of supporting life, and are often associated with widespread injury and death" (White 1974, 33)

> "....the impinging upon a structured community of an external force on a scale wide enough to excite public alarm and to disrupt normal patterns of behavior." (Powell as quoted in Hewitt 1983, 11)

"...disaster is more a function of the ability of communities to cope with the events - in terms of social and economic systems and physical structures - than of the phenomena itself." (Cuny 1983, 16)

"Disaster marks the interface between an extreme physical phenomenon and a vulnerable human population." (O'Keefe et al. 1976, 566)

A function "both of the physical event itself and the state of human society" (Hewitt and Burton 1971, 16)

"Disasters result from failures in interactions between vulnerable people and a prone environment." (Wijkman and Timberlake 1988, 128)

Defining disasters is complex and statistical discrepancies contribute to this complexity, particularly when considering different events as disasters. For example, some sources consider civil strife as a disaster and figures relating to war are calculated along with social disasters that are triggered by extreme environmental events (Hagman 1984; Pryor 1987; Green 1977). There are indicators, however, that natural hazards' transformation into social disasters occur disproporitonately in the underdeveloped nations. For example, the ratio for major disasters per year is 15 Asia to 10 Latin America and Africa to 1 Europe and Australia (Wijkman and Timberlake,1988: 6).

95% of disaster related deaths occur among two-thirds of the worlds

population that occupy underdeveloped countries (Burton et al. 1978, 2). Disaster statistics kept by the Office of United States Disaster Assistance (OFDA) and the League of Red Cross and Red Crescent Societies from the 1960's, 70's, and part of the 80's reveal an overall trend of the poorest countries having the highest death rates per event, the most casualties per 100,000 people, and the largest number of people killed per 1000 km^2 (Hagman 1984, 42). Furthermore, the costs incurred by developing nations must be seen relative to their resources. Disaster costs to underdeveloped nations as expressed as a proportion of income available are estimated to be at least ten times higher than those of industrial nations (Burton et al. 1978, 78).

While overall disaster statistics may vary depending on the source, the general tendencies reflected by disaster ratio, death rates, and costs appear to be realistic and indicate an increasing trend that most severely affects underdeveloped nations. These nations are not located in more hazardous regions nor can major geological or climatological changes in the global environment explain the increasing loss of life and property damage that corresponds to an increase of disasters in developing nations (Susman et al. 1983, 265).

Defintions of disasters that recognize explicitly the absolute importance of the human-environment spectrum are essential to planners. In the presence of natural hazards, planners' tasks are to reduce human vulnerability in hazardous regions and to to link knowledge with action by reversing the failures of interactions between people and environment. Undertaking this daunting task requires redefining the development process vís a vís perceptions of disasters,

relief and rehabilitation work, and the human vs. nature dichotomy. The development process has been approached traditionally through Modernization and critiqued by Dependency and others. These economic ideologies parallel perceptions of disaster and development strategies that international agencies, national governments, and hazard researchers apply in their work.

Perceptions of disasters also determine the quality of response to it. Relief and rehabilitation assistance are often criticized for not being cost-effective in terms of the best way to spend a limited amount of money to help afflicted people (Wijkman and Timberlake 1988). This criticism is based on relief agencies' perceptions of disasters as only emergencies and their failure to link disasters with long-term development (Cuny 1983, 17). Organizational and political deficiencies often create shallow perceptions and failures to link recovery with long-term development. These deficiencies can result in re-instating the pre-disaster status quo and/or contributing further to class vulnerabilities. Redefining responses to disasters is needed and will be addressed later in the paper.

UNDERDEVELOPMENT AND DEVELOPMENT: PROCESSES AT WORK

Dependency and Modernization are dichotomous economic ideologies that have dominated discussions of Latin American underdevelopment. These ideologies and their approaches to development generally correspond to the perceptions of hazard and disaster and their dichotomy shapes the debate within hazard research.

Wijkman's and Timberlake's hypothesis that most Third World disasters are unsolved development problems presents itself in a broad dependency context.

Examining this hypothesis calls for a critical examination of the characteristics of underdevelopment and marginalization. Population growth and concentration, environmental degradation and natural resource control, and economic imbalances created by capital penetration are interpreted as the structural causes of continous human vulnerability to disasters (Susman et al. 1983; Waddell 1983; Wijkman and Timberlake 1988). These conditions represent a general theory of marginalization. They are the decisive factors in the human-environment spectrum that make natural hazards even more dangerous and potentially destructive than the event itself (Hewitt 1983, vii).

Population growth and its "causes" are controversial. One argument is that if poor people practiced birth control they would have fewer children to feed and hence less financial hardship. The opposite argument contends that population growth is spurred by the poor's search for security. Having more children to contribute economically means being taken care of in old age. The latter argument identifies population growth as a symptom, not a cause, of increasing marginalization (Wijkman and Timberlake 1988, 119). Populaton growth is forcing more and more people to inhabit dangerous zones (i.e. floodplains) and the corresponding concentration of social and economic activity in these areas is a significant contributor to an increase in disasters (Hagman 1984, 45).

Various forms of environmental degradation also contribute to underdevelopment. Population density in Mexico City, for instance, is the major factor in urban environmental deterioration. Deforestation, soil erosion, and

subsequent desertification are unsound practices that affect the rural environment (Wijkman and Timberlake 1988, 9). Ecological mismanagement of existing resources disrupts the earth's organic methods of adjusting to its own hazards and alters normal environmental processes such as the hydrological cycle. For example, trees and other vegetation absorb heavy rainfall and regulate the run-off into tributaries when hurricanes approach land. Yet local populations are often forced by economic necessity to use unsound ecological practices, such as removing natural vegetation, for fuel and agricultural needs. When sloped areas are deforested, any amount of rain simply rushes downhill with topsoil, burying settlements and destroying subsistence agriculture. Existing socio-economic inequalities, such as landlessness and unemployment, forces local residents to seek land tenure and limits their accessibility and control of their own natural resources. Externally imposed socio-economic structures that combine with ecological mismanagement increases human vulnerability from several angles.

The most visible external and internal source and significant contributor to underdevelopment and marginalization is capital. Underdevelopment in one locale that is expressed by economic success elsewhere is a process that dates back centuries and supports the belief that as capitalism has evolved, so has underdevelopment (Susman et al. 1983; Smith 1990). A constant capital shortage in a peripheral underdeveloped nation results from several causes; capital flight of local elites, lack of reinvestment of capital in the local community, limited local markets, and a marked division of labor. These problems characterize many Latin American nations that are forced by debt servicing requirements to export

manufactured, agricultural, or electronic goods to earn capital via foreign currency. Export-oriented, capital-dictated development shapes the uneveness of productivity between sectors in terms of production per capita, disarticulaton of economic systems, and a domination of local economies by transnational corporations (Susman et al. 1983, 270).

Hurricane Fifi, which struck Honduras in September 1974, illustrates negative interactions among the four links that produced a social disaster. Social and economic disparities inceased in the late 1950's and continued through the 1960's and 70's when Honduran peasants near the San Pedro Sula Valley along the fertile Caribbean coast were gradually being forced off their land by Honduran elites, Standard Fruit, and United Brands. These groups sought to expand their commercial fruit production by not only acquiring additional land in the valley bottoms, but also through switching from labor-intensive production to capital-intensive production. By the late 1960's deforestation along the hillsides in this area was rapidly increasing due to increased agricultural needs of the subsistence farmers to cultivate maize. By the early 1970's, many hillsides were barren and the transformation process from hazard to disaster had begun, rooted in a form of economic development that produced underdevelopment through environmental degradation and an uneven socio-economic system. A late summer hurricane in the Caribbean produced torrential rains, washed tons of topsoil down the slope, and killed approximately 8000 people (Susman et al. 1983, 276; Wijkman and Timberlake 1988, 79).

The Honduran example illustrates the dichotomy between capital and

nature. Hurricane Fifi revealed how marginalized members of a population are affected by social, economic, and environmental vulnerability in the midst of capital growth and expansion. Capitalism in the 20th century has become the dominant global mode of production by reaching into all sectors of the global economy and has justified its actions on the scientific, positivist perspective. Nature is regarded simply as a commodity that can be reproduced similar to labor or other industrial inputs. The geography of capitalism, according to Neil Smith, produces uneven development that originates from space and society being considered apart. Capitalism views space as a field of activity separate from society. This produces a mechanical integration of space and society whereby uneven development is the systematic geographical expression in the structure of capital (Smith 1990, xi). William Rees adds that "Modern economics owes much to the scientific world view of the universe as a vast machine ..... because the global economy is cannibalizing the biosphere as ecological capital is converted into economic capital" (Rees 1987, 20).

Underdevelopment can thus be seen in a triad of population growth and density, uneven social and economic structures, and environmental degradation that is wrapped in capital domination. Disasters are thus regarded as "ACTS OF CAPITAL" (Waddell 1983, 47). This triad provides a dependency framework to begin understanding how natural hazards are transformed into social disasters and why these disasters occur most frequently in underdeveloped nations.

MODERNIZATION: TECHNOLOGY TRANSFER

Modernizationists agree with dependists that disasters occur most frequently in underdeveloped nations and that these countries bear a higher relative cost (Burton et al. 1978; National Research Council 1987; United Nations 1989). However, the modernization perspective of hazards and disasters is geared toward scientific and technological solutions which focus on prevention, prediction, and mitigation efforts. Modernizationists contend that these efforts will lead to hazard reduction and are "part of the process of lessening impacts of a potential event on the social and built environment" (NRC 1987, 1).

International cooperation in scientific and technolocial research directed toward natural hazards increased in the early 1980's. Proposals were made for an official program to facilitate and disseminate research (NRC 1987). In 1989 this became a reality when the United Nations General Assembly passed Resolution 44/236 declaring the 1990's as the International Decade for Natural Disaster Reduction (IDNDR). The purpose of the IDNDR is to coordinate an international program within the scientific and technological community to reduce the effects of natural hazards (NRC 1987; UNESCO 1990). The essence of the IDNDR is cooperative projects that apply knowledge as well as disseminate information on the local, national, and international level improving warning systems and sponsoring education programs (NRC 1987, 22). Hazard and risk assessment, disaster preparedness, and disaster mitigation are the the activities that the IDNDR hopes to improve through its cooperative effort.

Disaster mitigation is the primary focus of the IDNDR. These measures

rely on science and technology and include stronger built structures, warning and prediction systems, land use selection, and emergency preparedness. According to the National Research Council, these measures are not applied worldwide because the experience in their application or the critical data for effective use in a particular region are not available (NCR 1987).

One organization involved in natural hazard risk assessment and disaster mitigation is the Organization of American States' Department of Regional Development and Environment (OAS/DRDE). Since 1983, the DRDE has provided member states with technological assistance, training, and technology transfer with the objective of reducing or avoiding "the impact of disaster through intervention in the development planning and project formulation process" (OAS 1991, 1).

DRDE's technical assistance involves assessing natural hazard risks as part of natural resource evaluations, identifying and formulating mitigation measures for development investment projects, disseminating natural hazards information, and training planning technicians. They seek to manage natural hazards in order to reduce impact of disasters by addressing development decisions early in the planning process. OAS encourages member states to include natural hazard management and disaster mitigation in their national socio-economic development plans (OAS 1991).

DRDE projects occur at national or regional levels and collaborate with the appropriate planning institution(s). They have undertaken sector-specific vulnerability reduction studies at the national level for agriculture, transportation,

tourism, and energy to protect crucial infrastructure. Examples include a variety of projects in the Caribbean and Central America that are designed to assess risks, mitigate damage after an extreme event, and install emergency information systems as well as geographic information systems (GIS) where appropriate (OAS 1991, Annex 3).

Natural hazard research in academia also concentrates heavily on physical aspects of the hazard through prevention and mitigation measures. The "Dominant View" of natural hazards research corresponds with the strategies used by international agencies in hazard reduction and disaster mitigation activities. It is committed to monitoring geophysical and climatological processes, containing these processes through planning and managerial activities, and instituting emergency measures. Prediction, risk assessment, and relief and rehabilitation are the foci in hazard research as well as the approach taken by international agencies in hazard reduction and disaster mitigation (Burton et al. 1978; Hewitt 1983).

Throughout the 1960's and 1970's, natural hazard research was dominated by Burton, Kates, and White. Their research on natural hazards concentrates on the hazard itself, responses to the hazard, and choices in dealing with it on an individual, collective, national, and international level (Burton et al. 1978, 19). According to these authors, occupation of hazardous areas continues because people do not feel threatened by the hazard, the difficulty of moving elsewhere without assistance, a reluctance among the inhabitant to abandon an investment or livelihood, and because "superior economic opportunities are presented" (Burton, Kates, and White 1968, 23). They contend that more pressure is exerted by

national governments and development agencies to pursue technological solutions because these strategies involve a shift of costs from individuals to the society at large. Social solutions, they say, rely more on the individual and the costs are borne by only a few people (Burton et al. 1968).

These authors offer an "Interactive Explanation" for increasing disaster vulnerability in underdeveloped nations. This explanation states that nature is neutral and the extreme event only becomes hazardous when it interacts with humans. The event will lead to disaster when it is "extreme in magnitude, population strains are great, or the human use system is particularly vulnerable" (Burton et al. 1978, 215). Their explanation recognizes the obvious but makes no attempt to dig deeper and find the social, economic, and political origins of disasters.

DEPENDENCY AND MODERNIZATION: COMMON GROUND AND CRITIQUES

Modernizationists recognize the interaction between physical and human systems and acknowledge the disproportionate drain of disasters on underdeveloped nations. Burton, Kates, and White have also partially shifted their perspective of hazards and disasters from their 1960's research to their 1970's research. Their more recent works recognize the importance of distinguishing between measures that seek to rearrange or manipulate nature and those that involve a rearrangement or alteration of human behaivor and social systems (Burton et al. 1978, 11). They even acknowledge that technological measures in engineering

works or warning systems should not always be emulated by the Third World because these adjustments can aggravate a problem rather than ameliorate it (Burton et al. 1978, 14). They do not, however, elaborate on the circumstances when emulation should or should not take place.

The difference between their shifted perspective and the dependency perspective boils down to trade-offs between social benefits and economic costs when exploiting natural resources or occupying hazardous areas (Burton et al. 1978, 173). Burton, Kates, and White criticize their "radical critics who claim marginalization" and argue that treating hazards as though "they were wholly climatic or geologic or political or economic is to risk omission of components that must be taken into account if sound solutions for them are to be found" (Burton et al. 1978, 173, 214).

The dependency perspective in hazard research, advocated primarily by Waddell and Susman, argues that White and his followers "interpret crises as being a function of the 'imperfect knowledge' of the victims, which can be resolved by the transmission of knowledge and technology from the developed nations" (Waddell 1983, 38). The Dominant View in hazards research is also attacked as a technocratically oriented approach based on a distinct, scientific and institution-centered view of nature. Hewitt contends this approach is "fully symptomatic of the social contexts in which it has arisen and that still form its main points of reference....it is a construct reflecting the shaping hand of a contemporary social order" (Hewitt 1983, 4).

Further, dependists maintain that conditions of underdevelopment,

vulnerability, and hence marginalization are perpetuated by technological transfer. The same uneven forms of development introduced by capital continue disguised as disaster mitigation. Susman asks the crucial question: "Do technologies 'transferred' contribute to the economic and spatial integration of the underdeveloped country? Do they provide the impetus for employment and income growth and the establishment of complementary industrial linkages?" (Susman et al. 1986, 270).

Another criticism of modernizationists is that they ignore underlying social, economic, and political inequalities that render a society vulnerable even before the occurence of an extreme event. This is true in regions of the world that are highly susceptible to extreme events and have experienced centuries of socio-economic disparities, such as Latin America. The fundamental difference between modernizationists and dependenists is the former's concentration on physical aspects of natural hazards and the latter's emphasis placed on the social, economic, or political origins of disasters.

John Friedmann states that "the modern equivalent of Progress is the idea of Development" (Friedmann 1987, 3). The applications of development, such as technology transfer, that modernizationists currently use are rooted in the same scientific, positivist perspective that capitalism used to promote itself during the Industrial Revolution of the late 19th and early 20th century. Capitalism justified industrialization as a way of attaining social, economic, and cultural Progress via technology. A similar idea of development that restores economic infrastructure of state and private interests is often applied to rehabiliation work in the aftermath

of disaster.

EMERGENCY RELIEF AND LONG-TERM REHABILIATION

By-products of modernization, such as electronic communication and transportation, have made disaster relief and rehabilitation possible. They have also contributed to disaster relief and rehabilitation as a growth enterprise (Green 1977). A fundamental flaw exists in rehabilitation measures that spend so much money and effort mitigating the damages of disasters instead of curing the symptoms of marginalization. Symptoms of marginalization have already been outlined; they are the fundamental aspects that exacerbate the extent of a social disaster.

External aid, whether emergency relief or lengthier rehabiliation, can be further distinguished as being well-intentioned or intentionally manipulated. Both can cause problems and both have origins in overall organizational deficiencies, either in the donor agency or in the afflicted nation itself.

An example of well-intentioned aid gone wrong was food aid sent to Guatemala after the 1976 earthquake. The earthquake did not affect most crops and farmers were seemingly guaranteed to receive money for their grains at the market. Yet the local grain economy was undermined by donated grains that arrived in Guatemala at the same time of the local harvest. This caused much more economic damage than the earthquake itself (Susman et al. 1983).

A glaring example of intentionally manipulated relief aid occured in the aftermath of the Managua earthquake in 1972. Emergency supplies poured into

Managua's Las Mercedes airport hours after reports of the earthquake spread around the globe, yet were not distributed until four days after the earthquake because Somoza ordered that distributing emergency supplies could not be done without his signature (Diederich 1981). In addition to emergency supplies, relief funds totalling $143 million (U.S.) were sent to Nicaragua from countries around the world, including $32 million from the United States. Of this $32 million, only $16 million could be accounted for in a post-earthquake audit (GAO 1977). Somoza and his associates profited from the earthquake by appropriating millions of dollars, establishing housing and road construction companies, and engaging in land speculation that ultimately determined where commercial and residential areas would be rebuilt in Managua.

Even in the best case scenario of minimal damage and destruction, providing immediate emergency relief aid is warranted and justified. Direct responses to the victims are usually addressed by emergency relief organizations such as the Red Cross who provide temporary shelter, food, and medicine to meet immediate needs. There is a difference between these forms of immediate emergency relief and the lengthier process of rehabilitation aid. The latter has been criticized as perpetuating dependency and underdevelopment because it is "disproportionately focused upon restoring the infrastructural arrangements of the more powerful institutions of the economy and the state...rather than direct responses to the needs of victims" (Hewitt 1983, 28). It is thus perceived as restoring the unbalanced structures of the status quo and as serving as a band-aid to more severe societal, economic, and political deficiencies in existence prior to

the extreme event. Long-term rehabiliation assistance is a complex issue for other reasons. Many stricken nations often resent prolonged external influence in internal affairs and only want emergency aid. If long-term rehabilitation is permitted, it requires state cooperation and often some degree of state-financing. This can exacerbate a nations economic status by forcing it to take out more loans and become deeper in debt.

Even if long-term rehabiliation is controlled by the state, actors within the state can undermine efforts. After the Guatemalan earthquake, the government established the National Reconstruction Committee (NRC) to coordinate, supervise, and control all reconstruction development. It was comprised of development planners and scientists who viewed the earthquake as an opportunity to develop a sense of nationhood in a multicultural society, where the quality of life would improve through grass-roots participation in the reconstruction process. The NRC believed that reconstruction had to eliminate traditional forms of dependency by addressing social inequalities. By 1978-79, the NRC was having some success with its objectives. Yet powerful reactionaries within the government did not like the idea of restructuring Guatemalan society. They managed to dismantle NRC power and the momentum was lost. Soon thereafter, the military gained power as a "development agency" and created rural development poles within the country that displaced peasants who survived the earthquake. It was during this period that political repression and violence began its ascension in Guatemalan society (Bates 1982).

The issue of the military in relief and/or rehabiliation has been debated

because civil preparedness is assigned to them in many countries (Cuny 1983; Wijkman and Timberlake 1988; Doughty 1986). The military offers advantages such as mobile communication, self-sufficiency, and access to vehicles and equipment. Their ubiquitous discipline is also considered to be a physcological advantatge in a chaotic situation (Cuny 1983, 227).

Disadvantages, however, are more important for long-term considerations of the society as a whole. A disaster is a time when communities need to make collective decisions regarding their future and a hierarchy of decision making imposed by a military presence can inhibit or discourage this process (Wijkman and Timberlake 1988, 111). Thus, the military is not suited toward long-term roles because of its rigid hierarchy and because its methods of operation are conducted according to its capabilities. For example, alternatives to tents in refugee camps are not considered because the military has them and they are geared toward achieving high population density (Cuny 1983, 228).

The objectives of relief operations need to be redefined. The first step requires the state, international development/relief agencies, the public, and capital to change their perceptions of disasters and recognize a society's deficiencies and/or vulnerabilities vís a vís natural hazards. If short-term expediency (exclusive of emergency assistance) can be slowed down so that the nature vs. human perspective is refocused to that of nature and human, then much progress will have been made. Prevention better than cure should underline any redefinitions.

Redefining relief operations also requires assessing strengths and

weaknesses of the society that is being assisted. Anderson and Woodrow include these two factors in their Vulnerabilities and Capacities framework, which is intended to help design and evaluate relief projects. Vulnerabilities refer to long-term factors that weaken a community's ability to respond to events or which make it susceptible to disaster. They consist of sub-standard construction, poverty, over-crowding, land tenure, etc. Vulnerabilities are different than needs, which are short-term and are better handled through emergency relief. Vulnerabilities precede disasters, contribute to their severity, and usually impede response. Capacities, on the other hand, are the strengths within a society that can assist in building future development. Human initiative, cooperation and solidarity, as well as intact and useful material items are a few examples of capacities (Anderson and Woodrow 1989, 111).

This analytical framework examines the vulnerabilities and capacities of a society within three categories; the physical and material, the social and organizational, and the motivational and attitudinal. Physical and material items include land, climate, food, housing, capital and technology. The social and organizational category contains formal political politial structures, informal alliances among residents and organizations, as well as the religious, racial, or ethnic composition of a society. Motivational and attitudinal aspects reflect how a community views itself and its ability to deal with its physical, social, and economic environment (Anderson and Woodrow 1989).

The authors avoid any ideological debate when discussing capital, technology, and political structures in their framework. They simply recognize

that these factors are present in any situation. Their framework should be useful in delineating the roles of emergency relief assistance and long-term rehabilitation assistance because it provides a starting point from which to assess tasks. Its application is intended to reverse disaster responses by relief agencies that unintentionally undermine or subvert long-term development.

BASIC NEEDS AND SUSTAINABLE DEVELOPMENT

It is worth repeating that responding to hazards and reducing disasters can only be devised in relation to broader human goals. What are the goals that development should address? Social development includes humans' basic needs and should be met through equal access to common resources. Land, water, appropriate technology, financial resources, knowledge and skills, and social and political organizations are the resources essential to community needs. Accessing and sustaining these resources is the basis behind John Friedmann's and Clyde Weaver's Basic Needs Approach.

The Basic Needs Approach to development is a prescriptive planning strategy that seeks productive and reproductive sustainability so that a society does not depend on external sources simply to maintain a bare level of economic and social survival. Basic Needs is a model of development that treats production, distribution, and consumption of resources as facets of the same process of equal development. It is not an end in itself, but rather is a direction from which to begin challenging existing inequalities. Challenging these inequalities requires that production, distribution, and consumption be viewed from a social rather

than market perspective whereby the state is not subordinate to exogenous interests (Friedmann and Weaver 1979).

The involvment of the state is crucial in the Basic Needs Approach. "Every territorially integrated national community must be able to meet the basic needs of its members or eventually lose its claims to legitmacy" (Friedmann and Weaver 1979, 190). An investment in the well-being of its people is also an investment by the state in maintaining control. The state protects, develops, facilitates, regulates, and redistributes with the ultimate purposes of providing basic needs and maintaining its territorial interests (Friedmann and Weaver 1979). Regulating its own actions, however, is arguably the most difficult task that the state encounters. It must regulate its own actions so that its involvement in locally-initiated development efforts does not undermine local decision-making.

The notion of community is the crux of the Basic Needs Approach (Friedmann and Weaver 1979). A bottom-up approach, rather than a top-down approach, is essential in Basic Needs because only the community can guarantee satisfying its own basic needs. This can be applied on an international macro scale to a nation seeking access to common resources held by other nations. And it can also be applied on a micro scale to a local community pursuing common resources from its neighbors. Both scales employ a bottom-up approach that relies on internal strengths and human energies to achieve their goals.

A recent example of community mobilization during a social disaster occured in the aftermath of the 1985 Mexico City earthquake, which left over 100,000 people homeless. Many of these *damnificados* (homeless) participated in

organizing the Coordinación Unión de Damnificados (CUD) that eventually evolved into a powerful organization comprised of over 28 groups. Their activity centered around the collapse of the government-owned Tlatelolco apartment complex. CUD demanded that displaced residents be compensated with comparable housing, not with the 50% replacement value of the destroyed unit that the Urban Development Ministry offered. CUD continued exerting pressure on the Mexican government until a plan was created to expropriate and demolish 5,000 damaged properties and then rebuild housing units on those sites (Grayson 1987). The post-earthquake conditions inspired people to demand a basic need from the state. Residents' mobilization discredited the myth of victim helplessness often associated with disaster and also reinforced the belief in the community as guarantor of basic needs.

Meeting basic needs is more cost-effective and far-reaching than implementing expensive and often inappropriate technologies to mitigate disaster. The Basic Needs Approach to development should challenge practices of short-term return and expediency at the expense of irrevocably exhausting environmental resources. Future generations' access to natural resources is integral to the Basic Needs Approach. Sustainable development ties in with redefining long-term relief operations because if short-term expediency can be avoided, then long-term rehabilitation will actually contribute to reducing disaster vulnerability.

Sustainable development, however, requires "a radically different economics which fully recognizes the processes and limits of the biosphere

....(because).... the mechnical perception of the biosphere is dangerously superficial and the continuing belief in the possibility of sustainable development based on the growth-oriented assumptions of neo-classical economics is illusory." (Rees 1987, 18). Understanding sustainable development brings us, once again, to the task of redefining long-term rehabilitation. This redefinition needs to reorient perceptions of hazards, resources, and economics away from capital and toward humans.

CONCLUSION

Basic needs and sustainable development are clearly connected. Basic Needs orients itself toward satisfying essential material needs within social, political, and economic realms. These realms overlap with sustainable development and are major factors in determining appropriate land use and land tenure. Precautionary planning toward extreme events of hazards should be integrated with the Basic Needs Approach as an "insurance chapter" in any sustainable development plan (O'Keefe et al. 1976, 567). Identifying cultural attitudes toward the use of resources at the local or regional level, understanding the conditions and processes of marginalization, and focusing on pre-capitalist indigenous responses to natural hazards are initial tasks in reversing the failures of interactions between humans and their environments.

Examining the failures in the context of uneven social, political, and economic conditions and destructive environmental practices will certainly verify the hypothesis that social disasters originate from unsolved development

problems. A major question is whether particular historical opportunities or technocratic planning will be the impetus to equalize access, production, distribution, and consumption. A historical opportunity such as a global social disaster would most likely destroy, rather than equalize, these forms of restructuring society. Modifying perceptions of hazards, redefining relief and rehabiliation, and focusing on basic needs and sustainable development through various forms of planning will hopefully prevent a negative historical opportunity from occuring.