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**ENVIRONMENT, SECURITY AND 'NATURAL' DISASTERS:
CONTESTING DISCOURSES OF ENVIRONMENTAL SECURITY**

by

Denis Arsenault, B.A., B.Soc.Sc.

A thesis submitted to
The Faculty of Graduate Studies and Research
in partial fulfilment of
the requirements for the degree of

Master of Arts

Department of Geography

Carleton University
Ottawa, Ontario
May, 1998

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A handwritten signature in black ink, appearing to read "S. Delby", written over a horizontal line.

Thesis Supervisor

A handwritten signature in black ink, appearing to read "M. Smith", written over a horizontal line.

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May, 1998

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ABSTRACT

Recent debates regarding the merits and implications of framing demographic, resource and environmental problems as security issues have largely neglected matters of human vulnerability to natural hazards. Although a small number of observers have proposed the integration of questions of hazard vulnerability within alternative formulations of security, the potential drawbacks of doing so have remained almost entirely unexamined. It is argued in the present thesis that defining issues of disaster risk in security terms may only serve to further legitimate the security practices of states which already play an important role in the social production of vulnerability. Drawing primarily upon strategies of discursive analysis, the present thesis elucidates this argument by examining the manner in which conventional formulations and understandings of security in global politics have contributed to the social production of hazard vulnerability before, during and after the impact of natural hazards.

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LIST OF ACRONYMS

ARP	Agriculture Recovery Program (Sudan)
BFAD	Bangladesh Flood Action Plan
CDRN	Citizen's Disaster Response Network (Philippines)
CIDA	Canadian International Development Agency
ERP	Economic Recovery Program (Sudan)
IADB	Inter-American Development Bank
IDNDR	International Decade for Natural Disaster Reduction
IDRC	International Development Research Council
IMF	International Monetary Fund
NGO	Non-Governmental Organization
OAS	Organization of American States
OECD	Organization for Economic Cooperation and Development
OFDA	Office of Foreign Disaster Assistance (USAID)
OPEC	Organization of Petroleum Exporting Countries
PAR	Pressure and Release (Model)
SPLA	Sudanese People's Liberation Army
SPLM	Sudanese People's Liberation Movement
UNDRO	United Nations Disaster Relief Organization
USAID	United States Agency for International Development

Introduction

Since the end of the Cold War, there has been much discussion among academics and policy makers concerning the possibility of expanding or redefining the concepts of national and international security beyond their near exclusive focus on military matters in order to address other types of threats to the integrity and safety of states and their citizens. Indeed, with the dissolution of the bi-polar model of global politics, non-military issues such as ethnic conflict, terrorism, drug trafficking, human rights violations and environmental degradation have gained a higher profile among policy makers of advanced industrialized countries and have come to occupy a central position in discussions of national and international security (Camilleri, 1994).

Efforts to rethink contemporary political understandings of security have been prompted by a number of fundamental changes in the security environment of states around the world. Within the context of advanced industrialized countries, for example, threats to national security are no longer primarily military in nature. Indeed, as a result of the intensification of processes of economic globalization and the multiplication of patterns of interdependence, the usefulness of conventional military responses to resolve conflicts in the foreign policy arena has greatly diminished while the threat of global thermonuclear conflict which dominated discussions of national and international security during the Cold War has, at least for the moment, receded substantially (Ibid).

Meanwhile, the need to reconsider conventional understandings of national security is perhaps even more crucial in the developing countries of the so-called "South" given that such understandings of security not only fail effectively to address non-

military security threats such as the ones described above, they *themselves* are a primary source of insecurity. Indeed, in the context of “weak states” characterized by a lack of social cohesion and domestic political legitimacy, ‘security’ is often implicitly understood as the protection of an unjust social order from domestic threats to either the regime in power or the state itself. In such situations, the security of ruling élites and their interests are often maintained at the expense and insecurity of politically powerless groups (Thomas, 1991). Moreover, many non-traditional security threats including ethnic conflict, human rights violations and environmental degradation, are themselves to differing degrees the result of an inequitable socio-political and economic order maintained by national and international security arrangements.

In light of these *lacunae* in conventional security thinking, numerous analysts have asserted the necessity of rethinking conventional political understandings of security in order to reflect the challenges and problems of a newly emerging world order as well as to address the most immediate and pressing threats to the well-being of people (and not simply regimes or states) around the globe. Among the most prominent non-military issues which have received most attention among security analysts and policy makers in recent years are resource, environmental and demographic problems.

Environment and Security

A number of analysts have argued in recent years that, given the potentially far-reaching impacts of systemic forms of global environmental change (e.g. enhanced global warming, stratospheric ozone depletion) as well as localized forms of environmental and

resource degradation upon human health, economic prosperity and (arguably) political stability, a number of resource and environmental problems should be viewed as fundamental threats to national and international security (e.g. Mathews, 1994; Myers, 1993).

The manner in which the issue of enhanced global warming has been framed as a threat to national and international security is paradigmatic of the literature concerning the interface between issues of environment and security. Recent climate impact studies suggest that enhanced global warming could lead to shifts in temperature and rainfall patterns, raise sea levels and increase the number and/or severity of severe storms, all of which could have wide-ranging repercussions for developing economies around the globe which rely heavily upon agricultural production (Meyer-Abich, 1993). In addition to systemic processes of global environmental change, problems of resource degradation such as soil erosion, deforestation, water pollution are also increasingly viewed as threats to security -particularly in the context of developing countries- by virtue of their potential contribution to resource scarcity and economic hardship, which in turn could contribute to political instability and civil strife.

Given increasing levels of awareness of the potentially vast socio-economic impacts of environmental problems, as well as the potential consequences of such impacts for economic prosperity, political stability and armed conflict, the notion of *environmental security* has gained increased legitimacy in recent years. The ever-increasing ubiquitousness of environmental security as both a term and concept reflects the ascendance of environmental issues from the backwaters of diplomacy to the sphere

of “high” politics since the mid 1980s. Indeed, as Porter and Brown (1991) point out, environmental issues have joined military and economic matters as *the* key issues of global politics at the end of the twentieth century.

The increasingly vast literature concerning the relationship between resource and environmental issues and political formulations and understandings of security essentially focuses on two central issues. The first of these concerns the need to *redefine* the concept of security within the arena of global politics. Proponents of the concept of environmental security argue that the militarized, conflictual and state-centric understandings of security which evolved during the Cold War are archaic and fail to address the most pressing threats (e.g. the global environmental change) which face the global community in the post-Cold War era. Moreover, conventional understandings of security have themselves been identified as obstacles to ecological sustainability in terms of both the environmental impacts of the preparation and conduct of war (Renner, 1991; Seager, 1993) and the opportunity costs of massive military spending (Porter, 1996).

As a result, proponents of environmental security argue that both the goals and strategies of security policies need to be reconsidered and reformulated in order to reflect contemporary concerns over questions of ecological sustainability (Graeger, 1996). A particularly important feature of many of these proposals, though certainly not all, is the emphasis placed upon the need to integrate environmental issues within the context of and cooperative (rather than conflictual) frameworks of security such as “common security” or “world security” (Dalby, 1992a).

However, the growing trend to describe and define environmental problems in terms of threats to “security” has not gone unchallenged and uncriticized. Authors such as Deudney (1991) and Dalby (1992a; 1992b), for example, have argued that framing environmental problems as “security issues” may only exacerbate current problems and lead to the militarization of environmental issues. Furthermore, the identification of environmental problems as threats to national and international security is non-sensical according to some, since, as Jeremy Rifkin (1991) has forcefully argued, it is our modern notions of economic, political and military security which are largely responsible for the current environmental crisis in the first place. Nevertheless, despite these objections, the prominence of the concept of environmental security in global politics continues to grow (Levy, 1995).

The second focal point of the environment and security literature concerns the links between environmental change, resource scarcity and armed conflict (Woodrow Wilson Center, 1995: 63). Recent research in this vein suggests that resource scarcity can be a crucial contributing factor in either sparking or exacerbating low-intensity sub-state conflicts. By elucidating the linkages between resource scarcity and armed conflict, researchers hope to gain a better understanding of the causal dynamics of armed conflict and thus contribute to efforts to tackle the underlying causes of social tensions before they erupt into conflict. However, despite arousing widespread interest, such research efforts have also been widely criticized on methodological grounds as well as their practical utility in contributing to processes of policy formulation (Dabelko and Dabelko, 1995).

'Natural' Disasters and the Environmental Problematique

One crucial issue fundamentally related to the environmental *problematique* which has received less attention in discussions of global environmental politics, and environmental security in particular, is the mounting challenge posed by 'natural' disasters in the context of global environmental change. Loosely defined, the term "natural disasters" refers to acute catastrophic losses of life and/or property triggered by the impact of any of a range of extreme environmental conditions or events such as earthquakes, landslides, floods, hurricanes, and droughts upon vulnerable human populations.

Since the 1960s, losses from such disasters, especially weather-related disasters, have increased markedly around the globe. Although there is some disagreement as to the exact extent of these losses, the overall trend suggested by the various sets of statistics on disaster losses is unmistakable (Blaikie, *et al.*, 1994). The import of these trends is such that rising concern over ever increasing disaster losses prompted the General Assembly of the United Nations to designate the 1990s as the International Decade for Natural Disaster Reduction (IDNDR) (Smith, 1992).

There is considerable disagreement within the natural hazards literature as to the underlying causes of the recorded increase in disaster losses. While some researchers suggest the number of severe weather events such as droughts and hurricanes may be increasing (Anderson, 1995), the general consensus within the literature is that rising losses are due primarily to the increased human *vulnerability*, particularly in developing countries (Blaikie, *et al.*, 1994: 31). The risk posed by natural hazards is thus not simply

a function of the spatial-distribution of the hazards themselves: it also depends upon the vulnerability of individual and social groups occupying hazardous areas. Moreover, researchers have come to recognize the *differential* character of disaster vulnerability by highlighting the fact that poorer groups, more often than not, bear the brunt of the cost of such disasters. As a result of the increasing recognition of the central role of human action in determining whether or not hazard impacts result in a *disaster*, a large number of researchers have come to reject the popular notion of “*natural* disaster” (O’Keefe, *et al.*, 1976).

If increased human vulnerability, defined as the ability of individuals and groups to avoid, adjust or recover from the impact of natural hazards such as droughts, floods, severe coastal storms, landslides and earthquakes (Blaikie, *et al.*, 1994: 9) has been identified as the underlying cause behind observed increases in disaster losses, what are the causes of increased hazard vulnerability? According to Blaikie *et al.* (1994: 30-45) at least six “dynamic pressures” which have contributed to increased vulnerability to natural hazards: land degradation, rapid urbanization, population growth, global economic pressures (particularly foreign debt), systemic forms of global environmental change (i.e. enhanced global warming), and war.

However, in addition to acting as “dynamic pressures” which exacerbate to one degree or another hazard vulnerability around the globe, all of these processes are also central to the broader debates regarding the ecological and environmental sustainability of contemporary patterns of economic development. Indeed, all of these factors are either directly or indirectly associated with the current environmental crisis and are central

issues within debates concerning “sustainable development” (WCED, 1987). In any case, given the obvious importance of the human factor in the exacerbation of hazard vulnerability and especially the multiple linkages between hazard vulnerability and environmental sustainability, Blaikie *et al.* convincingly argue in favour of transforming hazard vulnerability reduction into an environmental issue (1994: 235).

Traditionally, so-called “natural disasters” have not been understood as an environmental problem given the commonplace perception of such calamities as “Acts of God” which humans can do little to prevent. However, recognition that such disasters are the result of social, political and economic processes which render human beings vulnerable to extreme conditions in the natural environment is rapidly mounting. More importantly, increasing awareness that losses from such disasters can be reduced through the adoption of various mitigation measures has also led to calls for the integration of natural disaster mitigation measures within the context of sustainable development policies and planning (Valdes, 1992; OAS, 1990).

Nevertheless, despite increasing recognition of the linkages between processes of environmental change and increased hazard vulnerability, the analysis of these problems all too often remains separate (Hewitt, 1995a). As a result, hazard vulnerability has been largely ignored in analyses of the nexus environment and security. It is this lacuna in the environment and security literature which this thesis seeks to address.

Research Objective

Although exploration of the linkages between political concepts of security and hazard vulnerability has been recently undertaken by others (e.g. Pettiford, 1995), the perspective adopted in this thesis differs significantly from these previous analyses. Rather than seeking to construct an alternative conceptualization of security which incorporates matters of hazard vulnerability as other have suggested (Thomas, 1991), the present study adopts the critical perspective advocated by Deudney (1991; 1992) and others who argue that political notions of security are an impediment to (rather than a useful conceptual tool for) achieving ecological sustainability. Taking this perspective as its analytical point of departure, the present study seeks to elucidate how the material and particularly discursive dimensions of the security practices of states constitute an essential component of the social processes which contribute to enhancing hazard vulnerability.

In so doing, I hope to achieve an (admittedly) preliminary synthesis of the literatures on environmental security and hazard vulnerability which, while intersecting in numerous and important ways, have yet to be brought together in a critical and systematic fashion. However, it should be kept in mind that although the linkages between environmental scarcities, acute conflict and 'natural' disasters are briefly addressed in the chapters which follow, the focus of the present study is first and foremost upon the place of hazard vulnerability issues within debates regarding the redefinition of security in global politics.

Thesis Organization

The thesis is divided into five chapters, the first of which consists of an overview of the literature concerning natural hazards and disasters, with a particular focus upon the concept of vulnerability. Within this discussion, particular emphasis is placed upon the role of socio-political and economic structures in exacerbating human vulnerability. Having done so, the chapter then situates the issue of human vulnerability to natural hazards within the larger context of the environmental *problematique*.

The second chapter provides a concise survey of the literature on the reformulation of political concepts of security and, more specifically, on proposals for the integration of environmental issues within alternative formulations of security. The latter section not only outlines the principal themes and arguments which characterize the environmental security debates, but also specifies the perspective adopted within this thesis vis-à-vis these debates. Finally, the chapter concludes by critically examining the position (or lack thereof) of hazard vulnerability issues within analyses of the environment and security nexus.

The third chapter describes the research strategy which informs the present investigation. Drawing inspiration from the recent emergence of poststructuralist theory within the discipline of Geography, the present thesis utilizes methods of discourse analysis to elucidate the relationship between political formulations of security and the social and ecological processes which underlie hazard vulnerability. More specifically, within the context of the present thesis, the term “discourse” refers to the framework within which statements or actions are made meaningful. It thus refers to the often

simple, implicit and taken-for-granted conceptual or theoretical frameworks which structure our ways of living, thinking and speaking. In this sense, the concept of discourse is “equivalent to a theory about how the world works assumed implicitly in practice by a politician, writer, academic or ‘ordinary person’” (Agnew and Corbridge, 1995: 47). Within this perspective, the significance of discourses resides in the fact that these represent widely shared, taken-for-granted assumptions of beliefs which normally go unquestioned. It is precisely the examination of the “hidden” and taken-for-granted assumptions which underlie the security practices of states (and their impact upon hazard vulnerability) which constitutes the central focus of the present analysis.

The fourth chapter examines how conventional political formulations of national and international security can serve to support and reinforce socio-political and economic processes which exacerbate disaster vulnerability. More specifically, it examines how the security practices of states can serve to legitimize and support development policies and projects which may exacerbate social inequalities as well as exacerbate hazard vulnerability among some social groups. This chapter also examines how the security practices of some states may enhance vulnerability by hindering relief and recovery efforts. By highlighting the all too often negative impact of conventional formulations of security upon hazard vulnerability, the analysis presented in this chapter underscores the importance of examining the “politics of security” (Dalby, 1997) within analyses of hazard vulnerability.

Although the bulk of the discussion in this fourth chapter is of a rather broad conceptual themes, the third section seeks to contextualize the arguments presented in the

preceding sections by examining in detail one particular ‘natural’ disaster: the Sudanese famine of 1984-1985. This brief case study consists of an analysis of the discursive underpinnings of contrasting representations of the origins and causes of this particular calamity. More specifically, the study examines the differing explanations of famine causation contained in governmental and consultants reports (North South Roundtable, 1986; USAID, 1986) and more critical academic analyses (e.g. Salih, 1990; Duffield, 1990a; 1990b). In so doing, the case study illustrates not only the impact of the security practices of states upon hazard vulnerability, but also the degree to which the politics of security are rarely addressed in analyses of hazard vulnerability.

The fifth chapter complements the analysis presented in the previous chapter by examining the discursive underpinnings of mainstream hazard management practices. The bulk of the chapter consists of a discursive analysis of two hazard management manuals (OAS, 1990; UNDRO, 1991) which were prepared under the banner of the IDNDR and typify the dominant technocratic approach to hazard management (Hewitt, 1995a). The analysis highlights the manner in which mainstream approaches to disaster management downplay the importance of socio-political and economic processes in exacerbating hazard vulnerability, all of which (directly and indirectly) serves to reinforce the security practices of states by maintaining the *status quo* and marginalizing questions of social equity. In so doing, the analysis underscores the degree to which hazard management and security practices share many of the same fundamental ontological assumptions as to who and what is to be ‘secured’ through such practices.

The conclusion summarizes the key arguments elaborated in the preceding chapters and draws out the implications of this analysis for future research efforts, particularly in the fields of security studies and hazards research. However, it is necessary to once again emphasize that the present thesis is a preliminary examination of the linkages between disaster vulnerability and notions of security. It makes no claims to comprehensiveness. Nevertheless, it is my fondest hope that the analysis which follows may contribute to enlarging the scope of discussion within debates on environment and security.

Chapter 1

Natural Hazards and 'Natural' Disasters: A Research Framework

Before embarking upon an exploration of the relationship between political concepts of security and 'natural' disasters, it is necessary to clarify the nature of such disasters by highlighting the socio-political, economic and ecological processes which render humans vulnerable to the impact of natural hazards. In addition to investigating the impact of these processes upon disaster vulnerability, the present chapter also pays particular attention to the linkages between hazard vulnerability and processes of resource use and degradation as well as environmental change. By highlighting such linkages, the discussion below illustrates the importance of integrating issues of hazard vulnerability within the research agendas on global environmental change and the nexus of environment and security.

The chapter is divided into four sections, the first of which defines in greater detail what is meant by natural hazards, 'natural' disasters and other related terms. The second section outlines the evolution of natural hazards research within Geography and discusses the two primary approaches which guide hazards research within the discipline. The third section describes the vulnerability analysis framework which informs the present study. The fourth and final section examines in greater depth how matters of hazard vulnerability are directly related to the broader environmental *problematique* and, based on this discussion, argues for the integration of hazard vulnerability concerns within analyses of environment and security.

Natural Hazards and ‘Natural’ Disasters: Problems of Definition

A useful starting point for the present discussion is the definition of the basic terms and concepts which will be used throughout this thesis. The term *natural hazards* refers to incidents where meteorological, geological or biological processes including droughts, floods, wildfires, earthquakes, volcanic eruptions, landslides, diseases and pests pose a threat to vulnerable human populations. Such natural processes and events are only designated as *hazards* in those instances where they pose a threat either to the immediate physical safety of human beings or to valuable economic goods such as houses, buildings and crops.

It is crucial to keep in mind that the consequences of some, though certainly not all, of these natural processes can be somewhat ambivalent. For example, while massive flooding can be quite destructive, floods also contribute to the regeneration of agricultural soils through the deposition of nutrient rich sediments. The fact that peasants in Bangladesh utilize different terms to distinguish ‘beneficial’ floods from those which are considered destructive reflects the dual nature of flood impacts (Paul, 1997: 122-123). Similarly, the benefits provided by the fertile soils which result from the weathering of volcanic ashes and pyroclastic materials act as a strong incentive for the establishment of settlements of lands adjacent to volcanoes despite the potential dangers posed by the occupation of such lands (Blaikie, *et al.*, 1994: 185).

When a natural hazard of sufficient intensity strikes an area inhabited by a large number of people who are vulnerable to its impact, the high levels of loss of life or property which can result are often described as *natural disasters*. While this term has

become deeply anchored in popular culture, it has gradually fallen into disrepute among natural hazards researchers since the 1970s. Ever increasing recognition of the central role of human agency in rendering individuals and groups *vulnerable* to events such as droughts and floods through the occupation of hazard-prone areas, the inappropriate use of technology and manipulation and alteration of landscapes and ecosystems has gradually led to the abandonment of the term “natural” as a qualifier in the description of such disasters. Various alternative descriptors including “nature” disasters and “unnatural” disasters have been proposed as more appropriate terms to describe such calamities (Wijkman and Timberlake, 1984: 11).

With this caveat in mind, we move on to the difficult, and perhaps impossible, task of defining the term *disaster*. While a large number of formal definitions have been formulated, there is still a lack of consensus as to what exactly constitutes a disaster situation.¹ More often than not, quantitative measurements of human and economic losses are used to identify hazardous events whose impacts are of sufficient magnitude to warrant the label “disaster”. An example of such a definition was formulated by the Natural Hazard Research Group at University of Colorado which defined a disaster as a calamity which causes at least one hundred deaths or one hundred injured individuals or at least \$1 million dollars in damage (Ibid: 19). Besides permitting the evaluation of monetary losses in disasters, the primary strength of quantitative measurements of the

¹

For an in-depth discussion of the difficulties in defining the term disaster, see Albala-Bertrand (1993).

impact of natural hazards lies in their ability to produce statistics, however flawed these may be, which permit analysts to monitor disaster trends.

While quantitative definitions of disaster may appear to be objective and precise, they possess several weaknesses, not the least of which are the numerous problems involved in the tabulation of both direct and indirect losses due to disasters (Smith, 1996: 20). On a more fundamental level however, the use of an arbitrary monetary value (in this case \$1 million) as a threshold beyond which a hazardous event is considered a “disaster” can be quite misleading. In some cases, monetary losses associated with hazardous events in developing countries do not accurately reflect the impact of these events upon people and their livelihoods. As Wijkman and Timberlake note

a tornado which destroys only a few homes may do over \$1 million in damages in a wealthy U.S. suburb, and thus be a “disaster”. But a widespread typhoon might destroy hundreds of Third World huts without causing \$1 million in damages, and thus not be a ‘disaster’ (Wijkman and Timberlake, 1984: 19).

Another important drawback of quantitative definitions of disaster is their failure to address the social and political impacts of such calamities. This lacuna is particularly crucial in the context of the present thesis, given its focus upon political formulations and understandings of security. In order to capture the social and political impacts of disasters, *qualitative* definitions of this rather slippery and elusive term have also been proposed. Within the context of the present study, a disaster is defined as an event wherein

a significant number of vulnerable people experience a hazard and suffer severe damage and/or disruption of their livelihood system in such a way that recovery is unlikely

without external aid. By 'recovery' we mean the psychological and physical recovery of victims, the replacement of physical resources and the social resources required to use them (Blaikie *et al.*, 1994: 21).

The principal virtue of this definition lies in its explicit use of the concept of *vulnerability* (discussed in greater detail below) which emphasizes the differential nature of hazard impacts upon people's livelihoods, and thus people's ability to recover from a hazardous event, in defining what constitutes a 'disaster'. By so doing, the socio-political context within which disaster as well as disaster recovery efforts take place are brought into focus.

Nevertheless, this definition does possess one important analytical weakness: it fails to elaborate upon the rather vague notion of "a significant number of vulnerable people", in which case it becomes difficult to elucidate in any way how many people's livelihoods must be damaged before the impact of a hazardous event is considered to be a *disaster*. This "zone of uncertainty" highlights the inherent limits to the use of quantitative definitions. In light of the limitations which characterize both types of definitions, Albala-Bertrand (1993: 11-14) argues that both qualitative and quantitative indicators must be taken into account when attempting to determine the impact of natural hazards.

Another important controversy among hazard researchers concerns the most appropriate scale of study in the analysis of hazard impacts. A number of authors including Lavell (1994) have argued that too much emphasis has been placed upon large-scale 'natural' disasters in analyzing the impact of natural hazards. Indeed, noting that

the cumulative economic impact of relatively frequent low-intensity or magnitude hazards may be larger than the impact of relatively rare high-intensity hazards (i.e. ‘disasters’), Jones (1992) has argued for a shift in research priorities towards these smaller hazard impacts.

While this last argument may very well merit further investigation, the present thesis nevertheless retains the traditional focus on disastrous, large-scale hazard impacts for two reasons. The first of these is the availability of numerous case studies of such major calamities. The second justification for retaining this traditional focus is that the *social* and *political* consequences of large-scale hazard impacts are likely to be far more significant and discernable than the impact of isolated small-scale hazardous events. In light of the focus of the present enquiry on political formulations and understandings of security, retaining the traditional focus on large-scale is thus entirely appropriate.

Before moving on, a few additional terminological clarifications are in order. In the pages and chapters to follow, the terms *hazard management* and *hazard mitigation* are used interchangeably to designate actions undertaken before a hazardous event to reduce vulnerability to the latter. Furthermore, because hazard research and management efforts generally focus on large-scale events, the term *disaster mitigation* is also occasionally used to signify hazard management activities.

Similarly, the terms *disaster management* and *disaster recovery* are also utilized in an interchangeable manner to designate the processes of relief and rehabilitation in the aftermath of a disaster. However, it must always be kept in mind that the processes of disaster mitigation and management are often inextricably linked in so far as the political

will required for the implementation of hazard mitigation measures is generally strongest in the wake of disaster (UNDRO, 1991: 4).

Natural Hazards Research in Geography: A Brief History

Before outlining the analytical framework of disaster causation which underpins this thesis, it is essential to briefly examine the evolution of natural hazards research within the discipline of Geography in order to situate the approach adopted here within the wider theoretical debates in the natural hazards literature. While the focus of the following review is on the contribution of geographers, this is not meant to ignore the existence or importance of the contributions of social scientists in cognate disciplines. This self-imposed limitation is instead a simple necessity in light of the vastness of the social science literature on human responses to hazards and disasters. In any case, given the interdisciplinary nature of the study of human responses to natural hazards, the contribution of other social scientists has not (at least in recent years) been lost on geographers in their research.

The Hazards Paradigm

Within Geography, systematic research on natural hazards was first undertaken in the mid 1940s by Gilbert White who analyzed human adjustments to floods (Marston, 1983). This work was complemented and expanded upon in research conducted by Ian Burton and Robert Kates, both of whom were students of White, in the early 1960s. This pioneering work on natural hazards within the discipline inspired the work of numerous

other researchers, all of whom contributed to the development of what would later be described as the “behaviouralist approach” to the study of natural hazards.

The approach adopted by White and his colleagues was in the vein of human ecology and was directly opposed to the environmental determinism which characterized previous work in the discipline on human-environment relations. Rather than viewing natural hazards as extreme forces of nature which impinge upon unsuspecting and vulnerable human populations, the emphasis in the work of White and his colleagues is on the various factors which influence human adjustments to the environment. In this view, natural hazards are perceived as being the result of “an interaction of people and nature governed by the co-existent adjustment processes in the human use system and the natural events system” (Emel and Peet, 1989: 63).

In other words, patterns of settlement and natural resource use (the human-use system) determine the exposure of humans to naturally occurring extreme environmental conditions (natural events system) which in turn can potentially lead to changes in human manipulation of the environment. White and his colleagues thus viewed the interaction of these two largely independent systems as resulting in the production of both resources and hazards (the latter of which are also occasionally described as “negative resources”).

A central facet of the human ecology model which lies at the heart of the behaviouralist approach is its focus upon human rationality as the crucial underlying factor in interpreting why human behaviour within the natural events system can occasionally lead to disastrous outcomes. Drawing inspiration from the work of psychologist H. A. Simon, the human ecology model developed by the Burton-Kates-

White school of hazards research is underpinned by a theory of rational decision-making which the authors term “bounded rationality” (Burton *et al.*, 1978: 52). The behavioral approach focuses largely upon individual and group perceptions of, and responses to, the danger posed by natural hazards. More specifically, exposure to extreme environmental conditions is viewed within this model as being mediated through people’s *perception* of the phenomena and their *awareness of adjustment opportunities*.

Among the factors determining the perception of a specific hazard are “the way in which the characteristics of the natural event are perceived, the nature of personal encounters with hazard, and the factor of individual personality” (Kates, as quoted in Marston, 1983: 340). Awareness of potential responses to a given natural hazard, ranging from short-term purposeful or incidental adjustments (e.g. flood fighting with sandbags, emergency evacuation measures, planting of drought resistant crops) to long-term adaptive measures (e.g. building human settlements on levees) are also posited as a determining factor of people’s exposure to natural hazards (Burton, *et al.*, 1978).

The behaviouralist approach thus views maladaptive behaviour with respect to natural hazards as the result of, at least in part, mistaken perception, imperfect knowledge or inflexibility in decision-making. Consequently, the policy recommendations proposed by researchers working within this framework tend to emphasize the need to change the populations’ perception of, and behaviour towards, natural hazards in order to modify and adjust the settlement and use of hazardous areas.

As for the dramatic increase in losses from natural disasters which has been observed in the last several decades, three key causes are emphasized within the

behaviouralist framework: population growth, increased settlement in hazard-prone areas (itself propelled largely by population growth) and the use of inappropriate technologies (Burton *et al.*, 1978). The explanation forwarded by those working within the behaviouralist paradigm can thus be characterized as a mixture of neo-Malthusian and technological causation (Emel and Peet, 1989).

In addition to dominating natural hazards research within Geography, the behaviouralist approach has also been highly influential in national and international programs aimed at hazard management. Indeed, this early work in hazards geography helped to expand the scope of hazard mitigation studies, which had hitherto been the near exclusive realm of engineering and economics, by promoting the use of non-structural or non-technological hazard management strategies such as land-use planning and insurance schemes. In any case, social science research drawing upon behaviouralist perspectives in the study of human adjustments to natural hazards has gradually become an integral component of the broader “hazards paradigm” which reigns supreme among hazard management professionals (Hewitt, 1995b).

Within this hazards paradigm, the natural events system is ontologically privileged in explanations of disaster while the role of human actions in the causation of such events is viewed as incidental or secondary. The occurrence of disaster is thus largely explained in terms of the spatio-temporal distribution of hazardous events such as earthquakes and droughts. As a result, social science research which emphasizes individual perception and awareness of natural hazards and potential adjustment measures to these hazards is dependent upon geophysical and engineering studies which primarily

emphasize the role of natural hazards themselves in explanations of disaster causation (Hewitt, 1983b).

Albeit the behaviouralist approach continues to dominate geographic research on hazards and disaster, its dominance is far from being uncontested. Indeed, the last two decades have witnessed the emergence of a number of alternative approaches to the study of hazards and disaster which emphasize the role of social, political, cultural and economic factors in *producing human vulnerability* to natural hazards. It is the various perspectives which are encompassed within this “vulnerability paradigm” which constitutes the topic of the next sub-section.

Vulnerability Paradigm

It was in the context of the political and ideological maelstrom of the early 1970s that the hegemony of the behaviouralist approach to natural hazards research within Geography was first contested in any significant way. This contestation originated in the works of a small number of geographers drawing inspiration from alternative frameworks of analysis, especially Marxism, in their study of famines and other disasters in the context of developing countries.² The impetus for this development of alternative approaches to the explanation of disaster causation was the failure of ill-conceived attempts to apply, within the context of developing countries, technologically

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For a summary of this initial work, see Hewitt (1983).

sophisticated disaster mitigation measures which evolved among advanced industrialized countries (Smith, 1992; Wijkman and Timberlake, 1984).

The growing discontent among some geographers with the ‘traditional’ behaviouralist approach to the study of natural hazards was clearly reflected by the stinging criticism to which the volume The Environment As Hazard by Burton, Kates and White was subjected to upon its publication in 1978. The volume in question was intended by its authors to be a synthesis of their research efforts, as well as that of their associates, on how individuals and societies respond to extreme events in nature. As such, it provides a concise summary of the theoretical and conceptual underpinnings of the behaviouralist approach.

The most prominent critique levelled at the volume in question (and the behaviouralist approach as a whole) concerns the model of human response based upon purposeful rationality. In his review of the volume in question, Walker (1979) notes that while the authors are fully aware of the social conditions which influence individual perception and response to the risk posed by natural hazards, they fail to present a workable theory of social processes to explain how such processes can condition or constrain individual or group responses. Given the importance of these processes in determining hazard risk, the bounded rationality model which constitutes the centrepiece of Burton *et al.*’s analytical framework leaves something to be desired.

Widespread criticism of the insufficient theorization of the influence of social structures and processes in the causation of ‘natural’ disasters within the behaviouralist approach eventually led to the formulation of alternative approaches to the analysis of

human responses to natural hazards in the late 1970s and early 1980s.³ While all of these alternative approaches seek to illuminate the role of social, political and economic structures and processes in producing hazard vulnerability, they do so in very different ways. Indeed, these alternative analytical models range from liberal to radical in outlook.

At the liberal end of the spectrum, the *managerial* approach attempts to “focus upon how particular institutions have mediated individual perceptions and behaviours” (Marston, 1983: 342). This approach has been criticized for its narrow focus upon the ‘managers’ (real-estate agents, lending institutions, etc) who control spatial resources while failing to illuminate “how the larger socio-economic context informs and constrains the behaviour of these so-called managers” (Ibid).

A more promising alternative to the traditional behaviouralist framework which emerged during the 1970s was the Marxist-influenced *political-economy* approach. In essence, this model of disaster causation seeks to combine the traditional human ecology model with a political economy framework in order to analyze human responses to natural hazards in the context of local, regional and global economic and social forces. Arguing that the rising toll of natural disasters is the result of the increasing *vulnerability* of people to natural hazards which have long recurred, the political economy approach asserts the importance of examining the *social production* of such vulnerabilities (Marston, 1983).

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For a concise overview of these early developments of the vulnerability paradigm, see Marston (1983).

Given that 'natural' disasters tend to affect the poor disproportionately, this type of analysis emphasizes the importance of social differentiation based on class in determining the *differential* levels of vulnerability within societies to natural hazards. In this approach, the socio-economic context within which a disaster takes place is carefully scrutinized and the links between hazard impact and the broader political and economic context is highlighted. More specifically, this approach seeks to analyze how social, political and economic factors constrain the options open to individuals and groups in their attempts to achieve secure livelihoods and thus assuring safe living conditions. In this view, vulnerability to natural hazards is thus seen as the result of precarious everyday living conditions which are greatly influenced, if not determined by, macro-scale social and economic processes.

The most prominent and radical formulation of the political economy approach which emerged in the early stages in the evolution of the vulnerability paradigm was the theory of marginalisation (Susman, *et al.*, 1983). Greatly influenced by the literature on underdevelopment, this particular theory argued that the penetration of capitalist forms of economic production and the implementation of development policies and projects are responsible for the deterioration of traditional coping strategies, particularly against drought, in the developing countries of the 'South'. Indeed, in the case of famine triggered by drought, a number of authors have argued that

the penetration of capitalist economic conditions into traditional societies has affected land-use and herding practices, leaving peasant farmers and pastoralists on the margins of subsistence and making them particularly vulnerable to drought hazard (Marston, 1983: 343).

Within the analytical framework of marginalisation theory, the extraction of surplus value via taxation, the promotion of cash crop cultivation and the expropriation of land for agricultural and industrial ‘development’ are identified as the primary factors underlying the destruction of traditional subsistence production and coping strategies. In so doing, the resource access of marginalized groups is reduced, which in turn impinges upon the livelihoods of such groups and exacerbates their vulnerability to drought and famine (Susman *et al.*, 1983). Although much less obvious, such shifts in social and economic processes were also identified as key factors in exacerbating vulnerability to other types of natural hazards such as landslides, floods and earthquakes (Cannon, 1994).

Furthermore, Susman *et al.* (1983) argued that disaster relief efforts more often than not work against the interests of those who suffer the most in disasters (often, but not necessarily always, the poor) by reinforcing the processes of underdevelopment which produced conditions of hazard vulnerability in the first place. Given that the purpose of disaster relief efforts is more often than not the restoration of the ‘normal’ functioning of society, despite the fact that disasters are often the result of unsafe living and working conditions engendered by the existing social ‘order’, this is not all surprising.⁴ In light of these observations, the authors argue that disaster relief and rehabilitation aid by and large parallels development aid and is in no way altruistic; instead, it represents at best “benign self-interest” on the part of aid donors (Ibid: 279).

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For a more detailed, albeit less radical, critique of the impacts of disaster relief efforts, see Cuny (1983).

Despite the significant contributions of such “structuralist” approaches to the elucidation of disaster causation, these have not been immune to criticism. W. I. Torry (1986), for example, has argued that dependency-style explanations of famines emphasize *ultimate* (i.e. macro-scale social and economic processes) causes at the expense of *proximate* (i.e. immediate) causes. Moreover, by dogmatically identifying capitalism as the ultimate cause of disasters such as famine, he argues that such explanations fail to explain the occurrence of such calamities in contexts where the penetration of capitalist modes of production has not taken place. More recently, Smith (1993) and Abbott (1991), among others, have recently argued that structuralist explanations are of little practical utility given the virtual impossibility of promoting substantial socio-political and economic change all in the name of disaster reduction. In addition to these structuralist approaches to the analysis of disaster causation, the dominant hazards paradigm has also been criticized from a Weberian perspective in terms of its *technocratic* conception of ‘natural’ disasters (Hewitt, 1983b). This critique, which differs significantly from, but is largely complementary to, the Marxist inspired critique outlined above, is an essential component of the analysis presented in the following chapters.

In a seminal text, Hewitt (1983b) forcefully argues that the dominant hazards paradigm (which he also simply describes as the “dominant view”) among hazard and disaster management organizations by and large locates the cause of ‘natural’ disasters in nature. This is perhaps most clearly reflected in the fact that the assessment of disaster risk consists in large measure of the mapping of the spatial and temporal distribution of natural hazards and the human artifacts which could potentially be exposed to their

impact. Within this conception of hazard and disaster analysis, the geophysical characteristics hazard itself are thus assumed to be the appropriate analytical point of departure. As a result, the social production of vulnerability (i.e. the socio-political and economic processes which contribute to the creation of hazardous patterns of human settlement) is largely ignored. Moreover, despite considerable case evidence that past development policies and projects have contributed to increased hazard vulnerability within developing countries (Blaikie, *et al.*, 1994), disaster impacts and development processes continue to be perceived in largely dichotomous terms, with the latter asserted to be the ultimate solution to the former.

Given its origins in geophysical perspectives on 'natural' disasters, the dominant hazards paradigm generally regards the deployment of sophisticated, state-of-the-art technological countermeasures and, concurrent with this, the promotion of economic development to be the most appropriate and effective response to the threat posed by natural hazards (Hewitt, 1995a; 1995b). It thus comes as no surprise that most research and financial expenditures go towards monitoring, planning (in order to predict and control natural processes where possible and human activities where not) and emergency measures when unforeseen and unavoidable disastrous hazard impacts do occur (Hewitt, 1983b).

As Emel and Peet argue, this approach to both hazard and disaster management

is particularly well suited to institutions carrying out technical work, with technology wedded to science of the most advanced kind; this makes it the creature of the most

powerful, wealthy, and centralized institutions, the leading organizations of government, business and culture (Emel and Peet, 1989: 64-65).

The quotation above is of great significance, in so far as it highlights how the “dominant view” within and among organizations involved in hazard management *reflects the interests, preoccupations and viewpoints of political and economic elites.*

This bias becomes particularly visible during relief and reconstruction efforts which are “often disproportionately focused on restoring, and more than restoring, the infrastructural arrangements of the more powerful institutions of the economy, the state and the international system, rather than direct responses to the needs of victims” (Hewitt, 1983b: 28).

In direct opposition to this bureaucratic-technocratic ethos which perceives disasters and development as polar opposites with the latter being the ultimate solution to the former, Hewitt (1995b) argues for an approach which is more responsive to the actual needs of disaster victims and which recognizes that the risks posed by the extremes in nature are determined by socio-political and economic factors within development processes . This critique of the ontological and epistemological assumptions and organizational arrangements which underpin contemporary governmental responses to hazard risk will be examined in greater detail in Chapter 5 wherein the linkages and parallels between the dominant hazards paradigm and conventional formulations and understandings of security will be highlighted.

Having examined the two principal paradigms which have guided hazards research within the discipline in recent years, the next section describes the specific

framework of *vulnerability analysis* which informs the present inquiry. Although this framework draws upon the insights of the political economy approaches discussed above, it is by no means a Marxist approach to the analysis of disaster causation. Indeed, it goes beyond the analysis of class in order to examine other variables (particularly age, gender, ethnicity) which are crucial to hazard vulnerability. Nevertheless, to the degree that this framework seeks to illuminate the socio-political and economic factors which undergird increased hazard vulnerability, it is clearly associated with the radical structuralist approaches which first emerged two decades ago among geographers engaged in hazards research.

Vulnerability Analysis

The discussion in the pages below outlines the vulnerability analysis framework which informs the present study. Given that the aim of this thesis is not the analysis of hazard vulnerability *per se*, but rather how such vulnerabilities are related to political understandings and practices of security, the following exposition is restricted to an examination of the essential concepts which underpin vulnerability analysis. By providing the reader with a coherent framework for understanding the causes of ‘natural’ disasters, the discussion presented in this section will help to contextualize the discussion in succeeding chapters on the relationship between political formulations of ‘security’ and disaster vulnerability.⁵

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A far more detailed exploration of the vulnerability framework utilized in this thesis is

Although the notion of vulnerability has long been utilized by researchers concerned with the impact of natural hazards (Cannon, 1994) and has recently begun to surface in studies of global environmental change (Dow and Downing, 1995; Kasperson and Dow, 1991), it has been used and interpreted in a wide variety of ways (Timmerman, 1981). In her analysis of the various conceptualizations of vulnerability, Cutter (1996) identifies two dominant interpretations of the concept: vulnerability as pre-existing condition (geographic space of vulnerability) and vulnerability as tempered response (social space of vulnerability). In spite of the fact that the term is increasingly associated with notions of the social production of vulnerability, it is still more often than not utilized to simply designate those areas which are susceptible to physical exposure to natural hazards (i.e. the geographical space of vulnerability) (Hewitt, 1995b). Given the absence of a widely accepted definition and understanding of vulnerability, it is crucial that usage of the term in the following pages be clearly defined.

Drawing on Blaikie *et al.*'s framework of analysis, vulnerability is defined in the present study as

the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from a natural hazard. It involves a combination of factors that determine the degree to which someone's life and livelihood is put at risk by a discrete and identifiable event in nature or society (Blaikie *et al.*, 1994: 9).

A central aspect of this definition of vulnerability is the concept of *livelihood* which, in this context, refers to the

presented in Chapters 1-3 of Blaikie *et al.* (1994).

command an individual, family, or other social group has over an income and/or bundles of resources that can be used or exchanged to satisfy its needs. This may involve information, cultural knowledge, social networks, legal rights as well as tools, land and other physical resources (Ibid).

In order to assess the risk of disaster, Blaikie and his colleagues posit the need to analyze the *social production of vulnerability*. In order to do so, the authors utilize two distinct but interrelated models of disaster: the pressure and release (PAR) model and the resource access model.

Pressure and Release Model

This first model is relatively simple and is intended to demonstrate how the risk of disaster is, as **Figure 1** illustrates, the result of the confluence of natural hazards and vulnerable populations. On the right we find various natural hazards to which populations may be exposed. On the left we find the various factors which may contribute to vulnerability. These factors are divided into three interconnected levels of analysis which the authors describe as the ‘progression of vulnerability’.

The first level is that of *root causes* which consists of widespread and well-entrenched economic, demographic and political processes. These macro-level processes determine the distribution of resources and power within and among societies. The root causes in question “are normally a function of economic structure, legal definition of rights, gender relations and other elements of ideological order” (Ibid: 24). These broad processes are related to hazard vulnerability by virtue of the fact that the

Figure 1

Pressure and Release (PAR) Model

Source: Blaikie, P., Cannon, T., Davis, I., Wisner, B. (1994) At Risk: natural hazards, people's vulnerability and disasters, London, Routledge, p. 23.

livelihoods of marginalized groups are often quite precarious given their lack of access to power structures and resources. Indeed, the inability of such groups to achieve secure access to resources or receive adequate public services can severely exacerbate their vulnerability to hazards such as drought and flood. Moreover, as Blaikie *et al.* (Ibid) remind us, marginalized groups “are likely to be a low priority for government interventions intended to deal with hazard mitigation”.

The next level in the progression of vulnerability is that of *dynamic pressures* which consist of specific processes and activities which ‘translate’ the effects of root causes into unsafe living conditions. Macro-level political and economic processes may, for example, contribute in some regions to dynamic pressures such as rural-urban migration and deforestation which in many cases can exacerbate vulnerability to specific hazards. According to Blaikie *et al.* (1994: 3-45), at least six dynamic pressures have contributed to increased hazard vulnerability around the globe. These “global pressures” include population growth, land degradation and environmental losses, rapid urbanization, global economic pressures, global environmental change and war. All of these dynamic pressures result either directly or indirectly from economic, political and demographic processes operating at different scales.

The third level of analysis is that of *unsafe living conditions*, and it is here that vulnerability of individuals and social groups is expressed in concrete terms. People living in conditions which render them vulnerable to natural hazards (low-lying flood plains, unstable hill sides, poorly constructed buildings vulnerable to earthquakes, etc) all too often do so because they have little choice. In their efforts to eke out a livelihood,

poor or marginalized groups must contend with various social, economic and political constraints which often compel them to live in conditions which render them vulnerable to natural hazards. Unsafe living conditions are thus linked to the root causes and dynamic pressures discussed above by virtue of the fact that the former in many cases may hamper access to secure and sustainable livelihoods which in turn can contribute to dynamic pressures which may exacerbate hazard vulnerability.

Indeed, any number of the dynamic pressures discussed above (e.g. rapid urbanization, land degradation) may interact in specific socio-spatial contexts by way of a series of complex pathways to compel marginalized groups into either adopting unsustainable practices (e.g. the over-exploitation of soil or forest resources) which can exacerbate the severity or frequency of natural hazards or live in unsafe areas (e.g. arid or semi-arid lands prone to drought, low-lying floodplains) which are generally prone to such hazards. While the precise manner in which these dynamic pressures interact in specific situations to produce disaster risk is clearly contingent and highly complex, the bulk of the research done on proneness to natural disasters in the South strongly suggests that these factors are crucial (Ibid: 30). Consequently, Blaikie and his colleagues (Ibid) argue “it is imperative that the links between unsafe conditions and global pressures be analyzed and understood, so that resources and attention can be put into reducing the pressures that generate vulnerability”.

Access Model

Despite its great utility, as a tool for analysis, the PAR model is insufficient for the task of analyzing the social production of vulnerability. The model possesses several weaknesses, not the least of which are the oversimplification of social processes as well as the artificial separation of these processes from natural hazards. As Blaikie *et al.* (Ibid: 46) point out, natural hazards can and do affect social processes by impinging upon access to resources such as through the destruction of crops by floods or droughts.

In order to address these lacunae, the authors propose a second related model which they term the *access* model. This model is essentially a magnification of the economic and political processes (on the right side of the PAR diagram) which lead to the social production of vulnerability. Given that the poor are disproportionately affected by 'natural' disasters, the distribution of power and wealth are emphasized in this model as major explanatory factors in such calamities (Ibid: 48). The model (**Figure 2**) is centred around the notion of livelihoods and how these are determined by access to resources and power structures. Utilizing the household as a basic unit of analysis, the model attempts to trace the resources available to its members. However, it is crucial to keep in mind that such households are not necessarily homogenous and that vulnerability can vary at the intra-household level according to variables of gender and age (Ibid: 53). Finally, ethnicity has also proven to be crucial to determining vulnerability in a number of cases including that of the Guatemalan earthquake of 1976 (Ibid: 170-171).

Figure 2

Access to resources to maintain livelihoods

Source: Blaikie, P., Cannon, T., Davis, I., Wisner, B. (1994) At Risk: natural hazards, people's vulnerability and disasters, London, Routledge, p. 50.

In light of the assets at its disposal at any one time (box 2b), each household chooses or is constrained to take up particular income or livelihood opportunities (box 3a). In rural areas such opportunities consist mostly related to the agricultural and livestock sectors while in urban areas income opportunities range from factory work and petty-trading to domestic work. Access to these opportunities are constrained by the qualifications required (box 3b) which can range from the possession of particular skills to membership of a particular tribe or caste, gender and age.

The income obtained by a household can be in the form of either goods or cash (e.g. wages, grain, remittances, profits from commerce or business). The sum of the resources available to a household constitutes its *access profile*. With the resources available to it, each household may construct a budget which reflects income and expenditures (box 7). Decisions concerning the use of surpluses or how to address deficits (through the consumption of a loan for example) will affect the access the access profile of a household in the future.

Keeping in mind that these livelihood strategies may shift throughout the year, the spatial dimension of these livelihood strategies is a key determinant of hazard vulnerability since income earning opportunities may force labourers to work in conditions which render them vulnerable. As Blaikie *et al.* (Ibid: 52) point out “cyclones coincide with the paddy harvest in Andra Pradesh (India), with the result that migrant workers find themselves in hazardous places at hazardous times”.

Drawing upon a number of case studies, Blaikie and his associates demonstrate how households with greater resources at their disposal are better able to recover from,

and in some cases avoid, disaster. For example, citing a case study of a devastating flood in India, the authors illustrate how limited access to resources (a radio to receive flood warnings, transportation to evacuate the area, etc) can make a household more vulnerable to hazard. Limited access to resources can also make a household more vulnerable to the next disaster by virtue of expenses incurred during the recovery process. As a result, vulnerability to 'natural' hazards can in some cases be self-reinforcing.

However, despite the importance of the social production of vulnerability in explanations of disaster causation, it must be emphasized that there are limits to the utility of analyses of differential hazard vulnerability. As Blaikie *et al.* (1994: 12) point out, it is not always possible to be aware of the hazards which people face: knowledge of hazards with long return periods (such as volcanic eruptions) may be scanty. Furthermore, in the case of some hazards, especially biological hazards, there is little social differentiation in terms of human impacts. As a result, hazards such as pests and epidemics are largely excluded from consideration in the present study (Ibid: 102-103).

Before concluding this section, it should be emphasized that the access model, along with the PAR model, is *not* a theory but rather an explanatory and organizational device. Its purpose is to provide a general research framework within which more specific and contextually appropriate theories of disaster can be inserted.⁶ More specifically, the framework is intended to contribute to research concerning disaster risk by helping to chart the impacts of policy, identify vulnerable populations and predict the

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Recent examples of such theories include Cutter (1996) and Watts and Bohle (1993).

probable outcomes of extreme natural events. In each particular case, only certain facets of the framework will be relevant and the identification of these facets will depend largely upon the particular theory of disaster which is chosen.

Hazard Vulnerability, Resource Use and Environmental Change

As discussed in the previous section, processes of resource degradation and environmental change including soil erosion, deforestation and climate change as well as other related trends (e.g. population growth, rapid urbanization and global economic arrangements) are among the principle “dynamic pressures” underlying increased vulnerability to natural hazards worldwide. The purpose of this last section is to explore in greater detail the interplay between resource degradation, environmental degradation and hazard vulnerability.

According to Wijkman and Timberlake, vulnerability to natural hazards can be increased in one of two ways:

First, people can alter their environment to make it more *prone* to certain disaster triggers, mainly to drought and flood. Second, people (and it appears from fatality statistics to be mainly poor people) can live in dangerous structures or on dangerous ground, making themselves more exposed and *vulnerable* to disaster trigger mechanisms (Wijkman and Timberlake, 1984: 29).

In the first case, it is indeed now generally recognized that localised forms of environmental degradation can exacerbate hazard vulnerability. Soil erosion can compound the impact of meteorological drought and even mimic the agricultural effects of the latter (i.e. a “pseudo-drought”) in cases of severe erosion (Sweringen, 1992;

Wijkman and Timberlake, 1984). Deforestation can help trigger landslides and in some cases may contribute to flooding, albeit there is a considerable amount of controversy and uncertainty concerning the extent to which flooding can be attributed to deforestation (Blaikie *et al.*, 1994: 135-136). Finally, in coastal areas, the destruction of foredunes, coral reefs and mangroves can intensify the damage inflicted by severe coastal storms (Blaikie, *et. al* 1994; Pryor 1982).

In addition to these localized forms of resource degradation and environmental change, systemic forms of global environmental change such as global warming may also contribute to vulnerability to natural hazards (Bruce, 1992). It is unclear at the present time whether the number of weather-related hazardous events (such as severe coastal storms) have actually increased. While some have argued that the increased losses from natural hazards are at least the partial result of an increase in the number of hazardous hydrological and meteorological events (e. g. Anderson, 1995) most recent studies conclude that these losses are largely the result of, as discussed in the previous section, increased human vulnerability. Nevertheless, there is certainly a possibility that such processes could exacerbate hazard vulnerability in the future. Indeed, as numerous climate change studies suggest, enhanced global warming could contribute to an increase in the number, scale and severity of droughts, floods, wild fires and various types of severe coastal storms (Bras, 1993; Meyer-Abich, 1993).

Beyond their impact in intensifying the frequency and severity of natural hazards, processes of land degradation in rural areas of developing countries also appear to be contributing, along with a number of other socio-political and economic factors, to high

rates of rural-urban migration (Jacobson, 1988; El-Hinnawi, 1985). Such migration can in turn lead to the formation of megacities which in turn can lead to increased vulnerability since the urban poor living in squatter settlements are often forced to occupy lands such as unstable hillsides, low-lying areas prone to flooding and dilapidated buildings which can become death-traps in earthquakes (Mitchell, 1995). In addition, rapid urbanization can overwhelm the ability of local or national governments to provide such things as proper housing and sanitation, all of which can contribute to vulnerability to various other natural hazards such as earthquakes (Blaikie *et al.*, 1994).

As even a brief perusal of current literature on global environmental change quickly reveals, all of these “dynamic pressures” are among the key issues under discussion. However, discussions of the impact of natural hazards (with the possible exception of drought) are often divorced from discussions concerning the sustainable use of natural resources and the capability of the biosphere of meeting the needs of the earth’s burgeoning population.

Given that vulnerability to natural hazards is intimately linked to issues of land-use and resource management, it would seem only logical that those working in the fields of environmental protection and disaster mitigation would and should work closely together. However, academics and activists in these two fields rarely interact, despite their common interests. As a result, Blaikie *et al.* affirm that the issue of disaster vulnerability must be firmly placed on the environmental agenda and become a “green” issue (1994: 235). Despite the fact that processes of resource degradation and climate change can exacerbate disaster risk and that so-called environmental extremes form an

integral part of human-environment relations, 'natural' disasters are not typically viewed as environmental problems. Nevertheless, the growing awareness of the human factor in the creation of such disasters has also led to numerous proposals for the inclusion of disaster mitigation measures within sustainable development policies and planning.⁷

Conclusion

This chapter has examined the nature of 'natural' disasters and has sought to illuminate the social production of disaster vulnerability as well as the linkages between 'natural' disasters and what are normally viewed as environmental issues. In light of the linkages which have begun to be forged between environmental issues and those of hazard management, it would seem both politically and intellectually appropriate at this time to explore the implications of hazard vulnerability disasters for analyses of the relationship between political formulations of security and matters of ecological sustainability and environmental protection.

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See, for example, Anderson (1995) and Valdes (1994).

Chapter 2

Environment and Security: Symbiotic Problematizations?

Comment: ...natural disasters, which are often worsened by human habitation in already hazardous areas, should not be excluded from environmental problems.

Comment: Regarding the differences between natural disasters and environmental problems: environmental degradation can be altered by policy and human action, while only the consequences of natural disasters, *rather than the root causes*, can be resolved.

Comment: Adding natural disasters to the mix (of environment and security) is an unnecessarily taxing step.

(Woodrow Wilson Center, 1995: 71 [emphasis added])

The previous chapter examined the social processes underlying the causation of ‘natural’ disasters and highlighted the manner in which vulnerability to natural hazards is often linked to various processes (e.g. land degradation, rapid urbanization, global economic processes) identified as symptoms or causes of global environmental change. However, despite increasing awareness of these linkages (e.g. Valdes, 1994), hazard vulnerability is still rarely viewed as an environmental issue *per se*. This tendency is clearly reflected in research on the nexus of environment and security in which the social processes that underlie hazard vulnerability have been largely ignored. In an attempt to address this *lacuna* in the environment and security literature, the present thesis provides a preliminary examination of the relationship between hazard vulnerability and dominant understandings of ‘security’ in global politics.

The purpose of this second chapter is to contextualize the analysis presented in later chapters by mapping the theoretical and conceptual terrain which underpins the

heated debates surrounding the newly emerging concept of 'environmental security'. The chapter is divided into three sections, the first of which outlines the recent evolution of the concept of security in global politics, with a particular emphasis on the political and intellectual context within which environmental issues have increasingly come to be framed as matters of 'security'. The second section then describes the specific themes and arguments which characterize the debates concerning the relationship between environmental matters and 'security'. The third section extends this discussion by examining the degree to which matters of hazard vulnerability have been marginalized within these debates and highlighting the importance of explicitly examining 'natural' disasters within analyses of the environment and security nexus. The fourth and final section discusses the position adopted in the present thesis *vis-à-vis* these debates and outlines the purpose and aims of the analysis presented in the following chapters.

The Concept of Security in Global Politics: Past and Present

Prior to the Second World War, the notion of 'security' had no clear definition or specific meaning in the sphere of global politics and its usage in political debate was rather limited. It was only with the advent of the Cold War that the political concept of security, and more particularly that of *national security*, came into wide usage (Romm, 1993). Although the term 'security' was understood and interpreted in a rather broad sense in the early part of the Cold War and encompassed both military and non-military considerations, by the end of the 1950s the concept of security gradually became primarily associated with issues of military security (Baldwin, 1995). Indeed, military

threats were identified by analysts and policy makers during the Cold War as *the* primary source of insecurity in the global political arena (Dalby, 1992a).

As a result, discussions of security during the latter part of the Cold War were largely oriented by the underlying tension between the United States and the Soviet Union as well as their respective allies. The threat of global thermonuclear conflict, the danger of conventional war in Europe and the proliferation of armed conflicts in the 'Third World' (many of which, though not all, involved either directly or indirectly the two Superpowers) were among the key substantive issues which preoccupied security analysts during this period.

To the degree that Cold War formulations of security were informed by political realism and its view of the nature of the state and international relations, an understanding of its principal tenets is an essential prerequisite to any analysis of the concept of security in the arena of global politics. Albeit a comprehensive review of the principles of political realism is obviously beyond the scope of the present study, its key characteristics which are of direct relevance to understanding the nature of conventional formulations of security are described in the pages below. Nevertheless, even with this self-imposed focus, such a description is far from being a simple task given that political realism is less "a coherent political position in its own right...(than) the site of a great many contested claims and metaphysical disputes" (Walker, 1993: 105). It is thus essential to keep in mind that the analysis presented below, which focuses on the latest and highly influential iteration of this intellectual tradition, that of neorealism, is far from being sufficient to account for the richness of political realist thought.

Within the discipline of International Relations, the dominant realist paradigm conceptualizes the international political community as an anarchic system populated by sovereign states which actively compete for political, economic and military supremacy in order to advance their own particular national interests. Within this framework, states are assumed to be unitary actors which constitute the principal, if not sole, agent in international politics. In other words, each state is assumed to represent the interests, and constitute the political embodiment of, a particular nation. As a result, the term “nation-state” is often utilized in analytical frameworks informed by political realism, and in political debates more generally, to indicate the synonymous character of nations and states. An important corollary to this assumption is the assertion that the interests and safety of individuals are represented and ensured by the nation-state of which they are citizens (Krause, 1996).

The manner in which realism conceptualizes the nature of international relations and the limits of political community in many ways predetermines the manner in which it frames matters of ‘security’ (Walker, 1993). Realist frameworks assume that, within the anarchic system of sovereign states, interactions between the spatio-political entities of states are primarily determined by coercive power and more particularly by military power. Within this competitive geopolitical arena, each state must formulate unilaterally defence strategies in order to assure its territorial integrity and security from foreign military threats. As Dalby (1992b) has pointed out, security is understood within this framework in explicitly geopolitical terms as an exercise in the spatial-exclusion of threatening “others”. In practice, this exercise encompasses not only the spatial-

exclusion of foreign military powers from the sovereign territory of the state, but also the exclusion and suppression of a variety of individuals and social groups deemed to be “subversive” and thus a threat to “security” by virtue of the potential challenge they pose to the internal sovereignty of the state or the authority of the regime in power.

The ontological assumption of the necessity and inevitability of “self-help” approaches to assuring security within an anarchical international system, as well the assumption that the safety of individuals and social groups is to be assured by the state, has led to the dominance of the concept of *national* security, at the expense of other levels of analysis, within discussions of security in global politics (Camilleri, 1994). Despite the primacy of individual states in the provision of security within neorealist accounts of international relations, states with common interests often form, in practice, various alliances (the most obvious example being NATO and the Warsaw Pact during the Cold War period) in an attempt to increase their level of security. It is the formation of such alliances which has led to the emergence of the concept of *international security* within the realm of global politics.

While realist interpretations of security and international relations continue to dominate in policy making circles, critiques of these dominant understandings of security began to surface in the mid-1970s in the United-States in the wake of the Vietnam War, the OPEC oil crisis and the “limits to growth” debates (Romm, 1993). Although efforts to rethink notions of security were largely swept aside in the early 1980s with the reassertion of Cold War premises of security based on notions of containment and deterrence (Dalby, 1988), proposals for the redefinition of the concept of security within

the arena of global politics have become more frequent and extensive since the end of the Cold War (Camilleri, 1994). The following sub-sections examine the principal critiques of conventional formulations of security which have surfaced in recent years and discusses how these have led to efforts to rethink the concept of security in global politics.

Security from What?

One of the most prominent critiques of realist formulations of security concerns its near exclusive focus on both conventional and unconventional (i.e. nuclear) military threats. With the end of the Cold War and the dissolution of the bi-polar orientation of global politics, the threat of global thermonuclear war has, at least for the time being, diminished considerably. As a result, nuclear defence strategies developed during this period based upon large-scale nuclear deterrence have been rendered largely obsolete (Ibid).

The emphasis of realist influenced security strategies on conventional military threats has also been the target of considerable criticism. Even at the height of the Cold War, numerous scholars argued that the threat of conventional warfare had diminished considerably due to a number of factors. First, conflicts over the legitimacy of borders have greatly diminished in recent decades due to the widespread acceptance of the principles of sovereignty and non-intervention as well as the creation of diplomatic mechanisms for the resolution of such disputes. This argument is borne out by the fact that the large majority of armed conflicts since 1945 have been sub-state in nature and have not involved border and territorial disputes between states (Thomas, 1991). Second,

the advantages of utilizing military force to either gain or maintain access to territories and natural resources, particularly non-renewable resources such as oil, have diminished considerably given the multiplication of patterns, the geographical diversification of sources of supply and the high costs of military action (Lipschutz and Holdren, 1990). Finally, the development of ever increasing forms of political and economic interdependence between states has led to the reduction of the presence of immediate military threats, particularly among advanced industrialized countries (Brown, 1994; Camilleri, 1994).

The arguments presented above are *not* meant to imply that the threat posed by interstate warfare is now a thing of the past. Instead, the purpose of these criticisms is, rather, to demonstrate that by focusing *exclusively* on external military threats, conventional political understandings of security present considerable opportunity costs (in terms of massive military spending) and fail to take into account some of the most immediate and pressing social, economic and environmental (i.e. non-military) dangers to the safety and welfare of societies (Brown, 1994).

The State and the Provision of Security

In addition to the matter of their near exclusive substantive focus on military issues, realist formulations of security have also been heavily criticized for their near exclusive emphasis on the state as the exclusive *guarantor* of security (Dalby, 1992b). Conventional formulations of security implicitly assume that the state is inevitably *the* sole guarantor of security in global politics. The provision of security is thus viewed within this framework as the exclusive domain of states. While this assumption is

somewhat plausible as long as security is narrowly defined in terms of military defence (given the state's exclusive monopoly upon the legitimate use of systematic violence) against external aggressors,¹ when one examines non-military threats to the safety and well-being of individuals and social groups, the effectiveness of the state as a provider of 'security' becomes more problematic.

The intensification of processes of economic and ecological globalization as well as the spread of democratic political arrangements has, according to one school of thought, severely compromised the autonomy of the state and has put into question its ability to address such issues effectively through unilateral measures (Sorensen, 1996).² The challenges posed by systemic forms of environmental change such as enhanced global warming and stratospheric ozone depletion illustrate this problem quite clearly. To the degree that the formulation of effective responses to these problems requires concerted international efforts, many states find themselves vulnerable to such forms of environmental change and yet are unable to formulate effective unilateral responses.

From this perspective, processes of ecological globalization clearly pose a severe challenge to the institution of state sovereignty (Byers, 1991). Moreover, the inability of individual states to address a multitude of social, economic and environmental problems

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However, even this assumption is vulnerable to critique. As Camilleri (1994) points out, the sheer destructiveness of modern warfare has led to a situation where the power to hurt has far outstripped the power to defend.

²

However, see Krasner (1993) for a counter-argument which asserts the increasing autonomy of the state in the context of increasing global economic interdependence.

has led to the formulation of numerous alternative conceptualizations of security which emphasize the need for constructive and cooperative approaches to enhancing 'security' (e.g. Klare and Thomas, 1994). By focusing exclusively upon the role of the state and failing to fully comprehend the implications of expanding forms of political, economic and ecological *interdependence* between states and regions, realist interpretations of international relations are thus in many ways inadequate to understanding the political dimension of the global change problematique.

Beyond the amplification of patterns of political, economic and ecological interdependence, another factor which brings into question the ability of the state to unilaterally address non-military threats to social safety is the central importance of non-state actors in aggravating or reducing such dangers. This is particularly true for such issues as environmental degradation where environmental NGOs have played a decisive role in raising awareness of ecological issues while, at the other end of the spectrum, the activities of Transnational Corporations (TNCs) have often been linked to unsustainable forms of resource exploitation and processes of global environmental change (Brown and Porter, 1991). The importance of such non-state actors combined with the intensification of processes of interdependence discussed above strongly suggests that the ability of the state to unilaterally ensure security (broadly defined) in the face of non-military dangers to societal safety and well-being is increasingly doubtful.

Who and What Shall We Secure?

Another fundamental premise of realist analyses of security which has been subjected to a sustained critique is that of the state as the principal *referent object* of

security. Conventional security analyses generally assume that the provision of 'national security' automatically assures the safety of the citizens of the state. This assumption is reflected in the tendency of realist formulations of security to focus upon the security of the state, rather than the security of individuals or social groups within the state.

However, for a large number of people around the globe, it is the state of which they themselves are citizens which poses the greatest threat to personal security (Krause, 1996).

Realist formulations of security also implicitly assume that the principal goal of security is, by and large, the protection of domestic social order from external threats (Dalby 1992a). However, for many individuals and social groups around the globe, the existing social order is itself the primary source of insecurity (a notable manifestation of which, as succeeding chapters demonstrate, is hazard vulnerability). Given that much of the discussion in the following chapters concerns the linkages between 'natural' disasters and security practices of states within the context of developing countries, a closer examination of the security situation in these regions is in order. Although the security practices of advanced industrialized states have contributed to vulnerability to *technological hazards* within the context of the 'North', the analysis below focuses upon the developing countries given the relative importance of vulnerability to natural hazards within the 'South'.

While any attempt to analyze the security situation within the 'South' as a whole is bound to produce generalizations of questionable validity, it is nevertheless reasonable to assert that the security situation of the majority of these states is derived in large part

from *internal factors*. More specifically, the lack of internal state legitimacy and sovereignty has been singled out by a number of analysts as a central factor in the security situation of a majority of these states (e.g. Krause, 1996; Sorensen 1996; Job, 1992; Thomas, 1991).

After what were in many cases protracted struggles for independence, Europe's former colonies in Africa and Asia became sovereign states in the period after the Second World War. However, by recognizing Europe's former colonies as sovereign states with former colonial boundaries intact, the international community "froze into place artificial political constructs in which domestic consensus was lacking" (Thomas, 1991: 270). Indeed, the processes of colonization and decolonization created a number of spatio-political entities composed of heterogeneous social groups lacking a unifying identity. The birth of the postcolonial states of the 'South' thus occurred in a historical context in which the processes of nation and state formation which characterized the historical development of the colonial powers of the 'North' were completely absent (Ayoob, 1992). In any case, the processes of colonization and decolonization produced a number of states within the 'South' which are legally recognized politically entities which nevertheless lack domestic legitimacy and often do not exist as 'social facts' within their borders (Thomas, 1991).

As Nandy (1992) has pointed out, the principal *raison d'être* of the state in the 'South' is the promotion of development and the provision of (national) security. Moreover, as the discussion below clearly illustrates, these two central objectives of the modern state are inextricably linked. In numerous developing countries, the

development policies and projects implemented or sanctioned by the regime in power tend to favour the interests of élites or particular social groups at the expense of other economically and politically powerless groups (Johnston, 1995). A prominent manifestation of this process is the expropriation of land for the purposes of agricultural or industrial development which often requires the forced relocation of marginalized peasant groups away from their traditional lands and sources of livelihoods (The Ecologist, 1993). The patterns of forced migration which result from the implementation of such development projects often leads to the occupation of environmentally fragile or hazard prone lands by dislocated populations in question. The implementation of development projects can thus directly contribute to production of scarcity which exacerbates problems of poverty and hazard vulnerability (Yapa and Wisner, 1995).

Such political and economic inequalities have helped to fuel popular discontent and have weakened the internal legitimacy of many states, all of which has led in many cases to armed conflicts between the state and those nations within the latter which are adversely affected by the implementation of the project of economic modernization (Clay, 1994). Indeed, the socio-economic inequalities created and perpetuated by political systems which flagrantly support the interests of particular groups is a central defining factor of the “insecurity dilemma” facing many developing countries.

When conventional formulations of security are applied within the context of postcolonial states in the ‘South’ which lack broad-based internal legitimacy, the result is often enhanced *insecurity* for politically marginalized groups within the state. The language of national security is often used by governments of these states as a discursive

resource in order to legitimize the use of violence and various repressive measures (e.g. imposition of curfews, internment, relocation of individuals and groups away from their means of livelihood) against domestic groups which in one way or another pose a challenge to the existing social and political order. In other words, the interests of national (i.e. state) security are invoked by states in order to justify the obstruction of activities which could lead to constructive social change by modifying unrepresentative and inequitable socio-political and economic institutions (Lopez, 1986; Alario, 1993). As a result, if one accepts the argument that achieving a more equitable and sustainable society will in many cases require substantial social and political change (e.g. Hewitt, 1995a), then notions of national and international security can, with good reason, be viewed as obstacles to ecologically sustainable development as well as disaster reduction.

Albeit the above critique of realist conceptualizations of security is rather crude and schematic, it does nevertheless serve to highlight how conventional formulations of security are in many cases politically irrelevant, if not counterproductive. Beyond their failure to address a wide range of non-military threats to safety and well-being and thus security in a more general sense, conventional formulations of security may also, particularly (although not exclusively) in the context of some postcolonial states, exacerbate the insecurity of individuals and social groups by hampering the formulation and implementation of socio-political and economic changes which may be necessary to address these insecurities.

Rethinking Security in the Post-Cold War Era

Increased awareness of the shortcomings and inadequacies of conventional formulations of security discussed above has led in recent years to numerous discussions among academics and policy makers concerning the possibility of rethinking and redefining political formulations and understandings of security. Although proposals for the redefinition of security first surfaced in the mid-1970s, the possibility of such an enterprise has gained increased legitimacy since the end of the Cold War. Indeed, with the end of the Cold War, conventional understandings of security which animated global politics since the end of the Second World War have, arguably, been suddenly rendered completely archaic.

With the reduction in the likelihood of global thermonuclear war as well as conventional (i.e. non-nuclear) interstate military conflicts in many parts of the world, the profile and importance of non-military threats to the safety and welfare of societies (e.g. economic inequalities, ethnic conflict, terrorism, human rights, environmental degradation) have increased dramatically. As a result of these momentous shifts in intellectual and global political landscapes, an extensive debate has emerged in recent years among academics and policy makers as to the need to expand or redefine the political concept of security in order to properly reflect and address the principal non-military challenges and dangers which the world faces at the close of the twentieth century (Dalby, 1992b).

It is widely recognized among security scholars that it is nearly impossible to formulate a precise definition of 'security' (Romm, 1993). Despite its close association

with matters of military defence during the Cold War, the notion of security was often understood and utilized by policy makers during this era in a much broader sense. Indeed, the term is often interpreted in different ways and is utilized by states to lend legitimacy to a variety of foreign and domestic policies, both military and non-military in nature. The U.S. government, for example, has in the past justified a wide variety of programmes and initiatives including energy policy and the construction of the interstate highway system by invoking the interests of “national security” (Woodrow Wilson Center, 1995: 65). As Buzan (1993) has quite rightly pointed out, it is precisely this vague and elastic quality which makes the notion of national security so politically useful. Given its rather elastic nature as well as its rhetorical power, the concept of national security is often used by political actors to justify and legitimize various programs and initiatives which seek to ameliorate the safety and welfare of society (Ullman, 1983). The content and meaning of the concept of security is thus highly contested and subject to constant discursive struggles.

Proposals for expanding or redefining the concept of security are of crucial political importance, and are far from being mere semantic academic exercises. The manner in which security is understood and defined by states plays a significant role in setting the policy and budgetary priorities of the state. As Porter has pointed out

(n)ational security has always been both an analytical tool and a political symbol of high national priorities. To recognize that a particular interest is a national security interest has meant attributing to it an urgency that overrides political and financial obstacles. The national security bureaucracy and political leaders have used the term “national security” and “national security threat” over nearly five decades to promote a wide variety of

policy initiatives and programs which they believed to be in the national interest (Porter, 1996a: 62).

Of all the non-military issues which have surfaced in debates regarding the redefinition of the political concepts of security, environmental issues are among the most prominent. Indeed, the degree to which resource, environmental and demographic issues are being increasingly framed in terms of threats to “security” by academics and policy makers (e.g. Dabelko and Dabelko, 1995; Clinton, 1995) is quite remarkable. Although some have argued that calls for the “securitization” of environmental issues is simply a rhetorical strategy on the part of environmentalists to raise the profile of environmental issues within policy making circles (and thus influence budgetary decisions), framing of environmental problems as a threat to ‘security’ also affects the manner in which both problems and potential solutions are framed (Dalby, 1996b).

Environment and Security: Conceptual Conflicts

Having examined the recent evolution of the political concept of security, this second section focuses on the manner in which environmental issues have come to be framed as matters of “security”. The literature addressing the relationship between environment and security deals primarily with two distinct but inter-related issues: the need to *a)* redefine *what* security is and *b)* identify and address the links between environmental/resource scarcities and acute conflict (and thus security as it is

conventionally understood in political circles).³ Summarized below are the principal themes and arguments which characterize these two crucial issues.

Environmental Security?

The first theme of the environment and security debates concerns the possibility, utility and desirability of expanding or redefining the concept of security in order to integrate demographic, resource and environmental issues which are of growing international concern. An increasing number of analysts and observers have begun to argue in recent years that, given their potentially far-reaching social, political and economic consequences, resource and environmental issues such as enhanced global warming, stratospheric ozone depletion, deforestation, soil erosion, dwindling fish stocks and increasing scarcities of freshwater in a number of regions should be considered to be legitimate threats to national and international security (e.g. Graeger, 1996; Swart 1996; Matthew, 1995; Dabelko and Dabelko, 1995; Mathews, 1994; Myers, 1993; Brown, 1989). Such arguments have led to the popularization of the concept of *environmental security* whose influence is being increasingly felt in the realm of global environmental politics (Levy, 1995; Brown and Porter, 1991).

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While the term "environmental security" is widely favoured by those who propose redefining the concept of security, numerous analysts investigating the links between environmental/resource scarcities and acute conflict prefer the term "environment *and* security". This distinction is crucial in so far as it emphasizes how those engaged in the study of the relationship between environment and conflict still view the latter as the central preoccupation of security analyses and policy.

The central argument which undergirds the various formulations of the environmental security thesis is that *a)* demographic, resource and environmental issues pose a far greater and immediate danger to the safety, well-being and prosperity of people around the globe compared to the threat of interstate warfare and that *b)* the socio-political and economic consequences of resource scarcity and environmental degradation may themselves, in some cases, contribute to triggering or exacerbating political instability and armed conflict within or between states and thus posing a threat to 'security' as traditionally understood (Mathews, 1994; Romm, 1993; Myers, 1993; Brown, 1989).

A paradigmatic example of the environmental security thesis is that put forth by Jessica Tuchman Mathews (1994: 278) who asserts that environmental decline impinges upon national security through its "downward pull on economic performance and, therefore, on political stability". Furthermore, she goes on to argue (Ibid: 280) that "when such resource and population trends are not addressed...the resulting economic decline leads to frustration, resentment, domestic unrest, or even civil war". This argument is paralleled by that of Myers (1993) who asserts that environmental problems are a crucial source of economic disruption, social tension and political antagonism, all of which can combine to cause or exacerbate armed conflict within or between states.⁴ In

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It should be pointed out that while proposals for the "greening" of concepts of security clearly draw upon arguments regarding the relationship between environmental scarcities and armed conflict, analyses of the latter theme of the environment and security literature do not necessarily advocate the reformulation of traditional concepts of security (e.g. Homer-Dixon, 1996a: 49).

light of these arguments, advocates of the concept of environmental security assert that traditional formulations of security which focus exclusively upon the military security of individual states present considerable opportunity costs. As a result, they argue that the concept of security in the sphere of international relations should be expanded or redefined to include, demographic, resource and environmental issues.

While some of these observers advocate including resource and environmental matters within existing frameworks of national security (e.g. Porter, 1996) a number of formulations of this concept involve integrating environmental matters within more cooperative models of global security. To the degree that effective responses to the challenges posed by systemic forms of global change such as enhanced global warming and stratospheric ozone depletion will require extensive international co-operation,⁵ a number of formulations of environmental security posit that framing these issues as threats to *international* or *global* security could contribute to the development and legitimization of a more co-operative approach to securing the safety and welfare of people around the globe (e.g. Stern, 1995; Soroos, 1994; Myers, 1993; Vavrousek, 1993; Mathews, 1991; Mische, 1989). By fostering the adoption of co-operative approaches to non-military threats to social safety, it is also hoped that the concept of environmental security could help contribute to the demilitarization of global politics (Graeger, 1996).

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The political implications of framing such issues as 'global' environmental problems is highly contested given that, historically, the advanced industrialized countries of the 'North' have been responsible for the emission of a large percentage of greenhouse gases and ozone destroying CFCs (Shiva, 1994; Roe, 1993; McCully, 1991).

Indeed, one of the primary motivations underpinning concepts of environmental security is the assumption that by designating environmental problems as threats to 'security', a significant amount of human and financial resources currently devoted to military endeavours could be diverted towards environmental protection efforts. In this sense, discourses of environmental security are primarily a rhetorical tool utilized by a number of political actors to help justify the reallocation of financial resources (e.g. Porter, 1996).

In order to illustrate more fully the environmental security thesis, it is instructive to examine how its proponents have discursively framed the issue of enhanced global warming as a threat to 'security'. Given its potential impact upon hazard vulnerability, an examination of arguments concerning enhanced global warming is particularly appropriate in the context of this thesis.

The potential consequences of increased global temperatures as a result of an enhanced greenhouse effect are numerous and wide-ranging (Flavin and Tunali, 1996; Meyer-Abich, 1993). Increased temperatures could lead to dramatic changes in weather and rainfall patterns which could cause considerable havoc in agricultural sectors by exacerbating the number and severity of droughts in certain areas. While agricultural production in some regions of the globe may very well benefit from increased temperatures and precipitation, other regions would be devastated. Severe shortages of rainfall would also have negative effects on energy production in those areas relying upon the production of hydro-electricity (Ibid: 79-80). The danger here is particularly acute for developing countries whose economies rely heavily on the export of agricultural products in order to generate revenues to meet debt payments (Meyer-Abich, 1993). Moreover,

the poorer sections of the population in LDCs who depend wholly or partly on subsistence agriculture could be severely affected. Without effective early warning and response systems, populations already coping with malnutrition on a daily basis could become vulnerable to famine.⁶

Increased temperatures may also lead to dramatic changes in marine ecosystems and habitats which in turn could have far reaching consequences for both commercial and subsistence fisheries. As in the case of agriculture, those countries or regions whose formal and informal economies are dependant on fisheries could be severely affected (Meyer-Abich, 1993: 80). Another potentially crucial consequence of an increase in ocean temperatures includes that of a rise in mean sea level (Ibid). Such a rise could lead to the permanent inundation of vast stretches of crucial low lying lands and exacerbate resource scarcity in some of the areas affected. According to Hekstra

many densely populated areas (with a total population of one billion people) could be flooded; coastal erosion would be severe; salt water intrusion inland would salinize many potable groundwaters; and one-third of the world's croplands could be lost to production (Hekstra, quoted in Thomas, 1992).

Those countries, such as Egypt, Bangladesh and Netherlands, which are characterized by extensive low lying regions are particularly vulnerable to rises in sea levels. In addition, the very survival of low lying island states such as the Maldives are threatened by rising sea levels (Pernetta, 1992).

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However, it should be kept in mind that drought is far from being the sole cause of famine. For a concise review of food security issues, see Bohle *et al.* (1994).

Enhanced global warming could also lead to an increase in both the number and severity of severe coastal storms. Given the already rapidly increasing economic losses from catastrophic rapid-onset weather disasters, a further increase in the number and severity of such atmospheric phenomena could push the national and international industries to the brink of posing serious capacity problems (Berz, 1992). As Jeremy Leggett (1993: 61) recently noted, in his discussions with senior actors in the insurance industry “the clear message was that ultimately what is at stake, if...global warming comes about, and the atmosphere is tipped in the direction of storminess, is the very future of the insurance industry”.

By virtue of its potentially vast and far-reaching social and economic impacts, enhanced global warming is viewed by a number of observers (e.g. Swart, 1996; Mathews, 1994; Myers, 1993) as a legitimate threat to ‘security’. This is particularly true of developing countries whose formal and informal economies are highly dependent upon renewable resources. As Flavin and Tunali argue,

(f)or developing countries, the economic effects (of climate change) could be catastrophic. The 1995 floods in (North) Korea, for example, brought the country’s economy on the verge of collapse. For nations struggling with a range of other environmental problems and already short of capital for development- which includes most countries of Africa and South Asia- the proliferation of... (natural) disasters would severely undermine economic prospects (Flavin and Tunali, 1996: 31).

However, post-industrial countries may also very well be severely affected by enhanced global warming. While such countries may themselves be able to adapt to climate change by adopting various adaptive measures (Meyer-Abich, 1993), the

economic losses incurred among developing countries as a result of increased hazard vulnerability may also be felt in advanced industrialized countries by way of its contribution along with other social, political, economic and environmental factors to a weakened foreign markets for goods produced by northern interests (Myers, 1993: 25-26).

Moreover, beyond the direct social and economic impacts of 'natural' disasters triggered by climate change, an increase in the incidence and severity of meteorological droughts, floods and severe storms may also result in patterns of (at least temporary) mass migrations, which in turn could exacerbate resource scarcities and social strife in areas receiving such "environmental refugees" (e.g. Döös, 1997; Myers, 1993: 201-203). Indeed, as the expanding body of research (see sub-section below) on the nexus between environmental scarcities and acute conflict suggests, in cases where receiving areas do not possess the resources necessary to accommodate such refugees, such population movements may very well contribute to social and political instability and armed conflict.

It is thus in light of the potentially vast socio-economic impacts of anthropogenically-induced climate change as well as the potential for such impacts to trigger or exacerbate political instability and armed conflict that enhanced global warming is considered by some to be a potential threat to 'security'. When viewed in conjunction with a multitude of other resource and environmental problems (e.g. stratospheric ozone depletion, soil erosion, deforestation and water scarcity), proponents argue that the global environmental *problematique* constitutes one of the key security challenges at the dawn of the 21st century.

Although the notion of environmental security has gained considerable legitimacy in recent years (Levy, 1995), numerous critiques of efforts to link environment and security issues have surfaced in recent years (Dabelko and Dabelko, 1995). While a detailed examination of these arguments is, as previously mentioned, beyond the scope of the present thesis, a brief overview of the key criticisms which have been levelled at this newly emerging concept is provided in the pages below.

The principal counter-argument regarding the “securitization” of environmental issues concerns the inappropriate nature of existing national security institutions for tackling resource and environmental problems. As Deudney (1991) has forcefully argued, given that environmental problems bear very little resemblance to military threats in terms of their causal dynamics (e.g. dangers posed by resource and environmental problems are unintentional consequences of human actions whereas military threats are fully intentional), existing security institutions, which are essentially concerned with the use of military force to address violent threats to the interests and integrity of the state, are completely inappropriate for the task promoting ecological sustainability. Moreover, to the degree that numerous environmental problems require responses which are co-operative and multilateral in nature, associating such issues with the conflictual and state-centric model of national security based on national interests and enmity between states, is highly inappropriate (Deudney, 1992).

Attempts to integrate environmental issues within conceptual frameworks of ‘security’ in global politics are also somewhat ironic given that military institutions and operations consume financial resources which could be more usefully spent on

environmental and social issues (Ibid) and that military activities in both peace and wartime intended to ensure “national security” are themselves directly linked to environmental degradation (Seager, 1993; Renner, 1991; Westing, 1988). In any case, the linkage of environmental issues with national security could very well lead to the “militarization” of environmental politics and preclude serious discussion of the role of states and their military-industrial complexes in causing environmental degradation (Finger, 1994).

Another, and perhaps more fundamental, critique is raised by Dalby (1992a; 1992b) who argues that Cold War formulations of national and international security have served to maintain socio-political and economic arrangements within and between states which in turn have served to support the diffusion of ecologically devastating practices of economic modernization. To the degree that significant changes to international political and economic arrangements are necessary to reduce North-South inequities and achieve equitable and ecologically sustainable development (Soto, 1992), dominant understandings of security may very well prove to be a formidable obstacle to promoting sustainability given that they essentially seek to maintain the status quo. Indeed, as Soroos (1994: 319-320) points out, “security as a human value is biased towards the preservation of the status quo, whereas rudimentary, indeed revolutionary, social changes will be needed to address the global change problematique”. In light of these arguments, framing environmental issues as threats to “security” could prove to be counterproductive given that what is being ‘secured’ as a rule are the very political and economic arrangements which underlie the environmental crisis in the first place!

Although a number of environmental security advocates have argued in favour of integrating environmental issues within alternative frameworks of security, Deudney (1992: 180) argues that the notion of security has become so closely associated with that of national security that it is virtually impossible for it to be usefully reformulated. He points out that alternative formulations of security such as that of “common security” are

not widely accepted in principle outside certain progressive circles, despite the sound reasoning behind it. Nor is it significantly reflected in the actual practice of state-violence-security organizations....Given this reality, it is premature to characterize environmental degradation as a threat to ‘security’ until we can be more confident that people do in fact think ‘common’ when they hear ‘security’ (Deudney, 1992: 180).

While the assumption that political understandings of security are fixed and unchanging is highly debatable given its historical development (Baldwin, 1995), it can also be argued that proponents of environmental security who favour integrating environmental considerations within co-operative security frameworks may very well underestimate the degree to which Cold War national security mindsets are well entrenched. This is not to say that traditional political understandings of security are immutable and cannot be transformed (Weaver, 1995: 78), it is only to acknowledge the hegemony of militarized, state-centric national security discourses (Pasha, 1996; Deudney, 1991) and the degree to which these discourses are inextricably linked to the interests and perspectives of existing security institutions.

These and other criticisms have led a number of observers to argue against framing environmental problems in terms of threats to security or, at the very least, national security (e.g. Weaver, 1995; Deudney, 1991; 1992; Dalby, 1992a; 1992b). This

position *vis-à-vis* the environment and security debates is perhaps best summarized by Deudney (1991) who argues that rather than constituting a potentially useful conceptual tool for tackling environmental problems, modern political notions of security represent a *barrier* to achieving ecological sustainability. It is from this perspective that he comes to the conclusion that

(t)he movement to preserve the habitability of the planet for future generations must directly challenge the tribal power of nationalism and the chronic militarization of public discourse. Ecological degradation is not a threat to national security; rather, environmentalism is a threat to national security attitudes and institutions (Deudney, 1992: 28).

'Environmental Scarcity' and Acute Conflict

The second key issue which dominates research on the nexus of environment and security concerns the role of environmental, resource and demographic factors in causing or exacerbating violent conflict. Unlike those who propose fundamentally redefining the concept of security, some analysts of the environment and security nexus operate largely within the parameters of traditional definitions of security and focus upon the relationship between environmental and resource factors and violent conflict.

The bulk of the work on the relationship between environmental scarcities and violent conflict focuses on the potential impact of increased scarcities of *renewable* resources (particularly agricultural land, water, forests, fish stocks) upon economic and socio-political stability, all of which could contribute to the eruption of violent conflict.⁷

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For a detailed bibliography on these research efforts, see Woodrow Wilson Center

These studies thus differ dramatically from those associated with the “limits to growth” debates of the early 1970s which focused upon the political and economic implications of scarcities of *non-renewable* resources such as oil.

The most widely known and publicized of the environment and conflict research efforts is the *Project on Environmental Change and Acute Conflict* led by Thomas Homer-Dixon (1996b; 1994; 1991). The research project in question was guided in its initial stages by two closely interrelated questions: does environmental scarcity cause violent conflict? And if so, how does it operate? Based on the research conducted under the auspices of this project, Homer-Dixon (1994) asserts that resource or ‘environmental’ scarcities are already contributing to violent conflicts in the developing world. These conflicts are largely sub-national, persistent and diffuse in nature. Moreover, he notes that poor societies tend to suffer most from conflicts related to environmental scarcities since they are often lack the capacity to buffer themselves against such scarcities.

Homer-Dixon outlines four general findings of the research project, the first of which concerns the relative importance of various types of environmental change. Despite the attention which systemic forms of global change (enhanced global warming, stratospheric ozone depletion) have attracted in recent years, Homer-Dixon asserts that the degradation and depletion of renewable resources such as arable land, forests, water and fish stocks *already* pose an immediate threat in many developing countries. He argues that

(1997: 237-238).

if these atmospheric problems do eventually have an impact, they will most likely operate not as individual environmental stresses, but in interaction with other, long present resource, demographic, and economic pressures that have gradually eroded the buffering capacity of some societies (Homer-Dixon, 1994: 7-8).

The second key finding is that environmental change (i.e. the degradation and depletion of resources) is only one of three main sources of renewable resource scarcity, the other two being population growth and unequal resource distribution. If it is to be analytically useful, the concept of environmental scarcity must incorporate all three of these elements in its analysis.

The third finding is that these three sources of environmental scarcity often interact to produce resource scarcities among particular groups. Homer-Dixon identifies and outlines two common patterns of interaction: *resource capture* and *ecological marginalization*. The former occurs when a fall in the quantity and/or quality of renewable resources combines with population growth to prompt elites to shift resource distribution in their favour. Homer-Dixon cites the violent clashes over land in the Senegal River Valley in 1989 as well as the tensions over access to water on the occupied West Bank of the Jordan River as examples of resource capture.

Ecological marginalization occurs when unequal resource distribution combines with population growth to prompt marginalized groups to migrate to lands which are ecologically fragile. In cases where such refugees come to occupy lands which are ecologically fragile, Homer-Dixon (Ibid: 10-11) argues that “high population densities in these areas, combined with a lack of knowledge and capital to protect local resources,

causes severe environmental damage and chronic poverty” . The damage inflicted upon these fragile ecosystems can lead to a number of problems including water erosion, landslides and changes in the hydrological cycle. Processes of ecological marginalization can thus enhance hazard vulnerability by exacerbating the frequency and severity of hazards as well as by forcing marginalized groups to live in areas prone to hazards. Such patterns of ecological marginalization have been observed in numerous countries as diverse as the Philippines, Indonesia, Costa Rica and Brazil (Ibid). Given that the primary push factors underlying such patterns of migration revolve around insufficient access to natural resources, these migrants are often also described as ‘environmental refugees’.

The fourth general finding concerns the ability of developing states which are vulnerable to environmental scarcities to avoid conflict and social chaos by *adapting* to environmental scarcities. He identifies two categories of adaptations to environmental scarcities. The first of these is the promotion of ecologically sustainable resource use coupled with the provision of alternative employment for people who lack access to natural resources. The second strategy involves reducing the dependency of developing countries upon their depleted environmental resources by producing goods and services that do not rely heavily on these resources.

Regardless of which strategy is chosen, successful adaptation to environmental scarcity requires a society to be able to produce enough *social* and *technological* ingenuity at the right places at the right time. Technological ingenuity is defined in this context as the ability to develop, for example, new environmental and conservation

technologies in order to compensate for environmental losses. However, the development of such technologies also requires social ingenuity in order to create institutions and organizations that buffer people from the effects of scarcity and provide the right incentives for technological entrepreneurs. It is precisely this prerequisite of social ingenuity, and the perceived lack thereof among developing countries, which leads Homer-Dixon and his colleagues to conclude that the key to overcoming environmental scarcities in developing arising from population growth, rising average resource consumption and persistent inequalities in access to resources lies in resolving this “ingenuity gap” (Ibid: 16-17).

The findings of Homer-Dixon and his associates has sparked a vigorous debate in the security studies field, with numerous observers expressing scepticism as to the validity and usefulness of these findings. While Homer-Dixon is in agreement with critics such as Deudney (1992) that environmental scarcities are unlikely (with the possible exception of water scarcity) to produce interstate “resource wars”, his central argument that such scarcities do in fact contribute to low-intensity, sub-state conflicts (1996a) has been disputed on several fronts. These points of contention include questions of appropriate research methodologies for identifying the linkages between environmental scarcities and acute conflict and the relative importance of such scarcities in igniting or exacerbating armed conflict (for a review of these debates, see Homer-Dixon, 1996; Levy, 1996).

In any case, given that this thesis is principally concerned with the impact of state-centric security discourses upon hazard vulnerability (i.e. the first theme of the

environment and security debates), an in-depth discussion of the complexities of the methodological disputes discussed above is far beyond the scope of this thesis.

Nevertheless, this theme is briefly touched upon in the chapters which follow. Moreover, it is crucial to keep in mind that the presence of uncertainties regarding the relationship between environmental scarcities and armed conflict partially undermines some articulations of the environmental security thesis (e.g. Myers, 1993).

Environment, Security and ‘Natural’ Disasters

Having outlined in the previous section the broad parameters of the environment and security debates, this third section maps the position of questions of hazard vulnerability within the intellectual and political terrain of these heated debates. More specifically, it examines the somewhat limited efforts which have been made thus far to integrate matters of hazard vulnerability within analyses of the environment and security nexus.

Given that natural hazards (or “negative resources”) constitute an integral component of human-environment relations and cannot be divorced from resource management issues (Chapter 1), it is quite reasonable to argue that matters of hazard vulnerability should be explicitly addressed in research on the nexus of environment and security. Although there have been some recent efforts to begin examining in a systematic manner the relationship between ‘natural’ disasters and political understandings of security (Pettiford, 1995; Pettiford and Smith, forthcoming), the issue of hazard vulnerability has, due to a number of factors, generally received very limited

attention within this literature. Most prominent among these is the continued dominance of the traditional view of 'natural' disasters as being "Acts of God" which remain outside the control of humans. Indeed, as the quotation at the beginning of this chapter suggests, the traditional view of disaster causation in which the social production of hazard vulnerability is ignored is clearly present, at least to some degree, in discussions pertaining to the nexus of environment and security.

This silence pertaining to matters of hazard vulnerability within discourses of environment and security is particularly well illustrated by the policy prescriptions put forth by a plethora of environmental security advocates concerning climate change.

While the potential socio-political and especially economic consequences of enhanced global warming in terms of an increase in the number and severity of natural hazards are widely recognized by these and other observers, these are almost invariably utilized as a justification for the adoption of preventive measures for the reduction of carbon emissions.

An example of this rhetorical strategy is Eileen Claussen's recent discussion of the future of U.S. security policies wherein she argued that given the potential impacts of climate change on U.S. agriculture and other economic sectors, the issue of enhanced global warming should be considered to be a legitimate security priority. Moreover, she notes that

even a modest 0.9 degree increase in average global temperatures could produce a 20-day extension of the hurricane season, a 33% jump in hurricane landfalls in the United States and a 30% rise in catastrophic losses from

storms. *No foreign army has done that much damage to our territory since the War of 1812* (Claussen, 1995: 42 [emphasis is mine]).

Noting that challenges to the economic prosperity of the United-States have long been viewed as security concerns, Claussen argues that an increase in the number and severity of severe storms as a result of enhanced global warming constitutes as an 'enemy' which threatens the economic welfare and therefore security of the United-States. This argument is in turn utilized by the author to justify a number of foreign policy initiatives to promote sustainable development (1995: 42-43). However, what is often elided in such discussions is the fact that, if enhanced global warming is indeed occurring, we are *already* committed to both preventive *and* adaptive strategies (Smithers and Smit, 1997; Kaspersen and Dow, 1991). Moreover, regardless of whether an increase in hazardous events such as hurricanes takes place, others processes such as rapid urbanization and industrialization will increase vulnerability to such hazards (Chapter 1). From this perspective, the importance of integrating considerations of hazard vulnerability in analyses of environment and security becomes obvious.

However, to be fair, the possibility of including hazard management concerns within alternative conceptualizations of security has not been completely slighted. For example, in a widely cited article, Ullman (1983) argued that the possibility of major earthquakes in California is a threat to economic security of the United-States. In light of the potentially dire consequences of a large-scale earthquake disaster in the Golden State, Ullman pointed out that an increase in the allocation of financial resources towards efforts to mitigate the effects of earthquakes in California would provide *at least* as much

'security' as a similar increase in military expenditures (Ibid). Indeed, comparing the potential danger posed by a major earthquake in California and a thermonuclear war between the U.S. and the U.S.S.R., Ullman asserted (amidst the renewal of Cold War tensions) that compared to an increase in military expenditures

the probability that an incremental expenditure on protection against earthquake or floods will be effective (in increasing 'security') is surely very much greater than the probability that a comparable incremental expenditure will enhance deterrence against nuclear war (Ullman, 1983: 138).

Nevertheless, this key argument in what would prove to be a seminal article in the field of security studies has been overshadowed in discussions of environment and security by the emergence of widespread concern over problems of 'global' environmental change. As Jones (1992) has pointed out, the International Decade for Natural Disaster Reduction (IDNDR) has largely failed to attract widespread attention among policy makers largely because the impact of traditional natural hazards has been overshadowed in the 1990s by concern over novel and diffuse hazards such as enhanced global warming and stratospheric ozone depletion. Indeed, despite the fact that enhanced global warming could exacerbate the frequency and severity of weather related hazards, research on climate impacts has by and large lagged behind that of climate change (Cohen, 1993), while systematic investigation concerning human adaptation to climatic variability and change in relation to the global change problematique is still in its early stages (Smithers and Smit, 1997).

The most systematic effort to integrate the issues of disaster vulnerability within alternative formulations of security to have appeared thus far has been that of Pettiford

(1995). In this seminal article, Pettiford argues that in the context of Central America, vulnerability to natural hazards represents a far greater threat to the security of both individuals and states compared to traditional military threats. The bulk of the text in question consists of a detailed description of the human and economic losses incurred by countries in this region. Based on these observations, Pettiford concludes that political formulations of security in this region must be partially reoriented to address those internal social processes which lead to ecological degradation and hazard vulnerability. Pettiford's approach to the relationship between political formulations of security and matters of hazard vulnerability thus largely parallels the arguments of environmental security advocates who propose the expansion of political formulations of security in order to incorporate environmental issues.

Within analyses of the nexus of environmental scarcities and violent conflict, 'natural' disasters have, with a few notable exceptions, been treated in a largely peripheral manner. Nevertheless, such calamities can contribute to political instability and conflict in at least two ways, the first of which is through the exacerbation of resource scarcities among marginalized groups which in turn can contribute to political tension and armed conflict. To the degree that the impact of hazards such as droughts, floods and hurricanes often further undermines the resource access profile and disrupts the livelihoods of marginalized groups (Chapter 1), these disasters can feed into and exacerbate processes of ecological marginalization.

While the model devised by Homer-Dixon and his colleagues examines how population growth, unequal land distribution and resource degradation can exacerbate

environmental scarcities among marginalized groups, it fails to fully explore how such scarcities can exacerbate hazard vulnerability and how hazard impacts can in turn enhance resource scarcities among marginalized groups. In other words, while the model helps somewhat to elucidate the socio-political roots of environmental degradation, it fails to utilize these same insights to explore how the occupation of hazardous areas can exacerbate resource scarcity when disaster strikes. In order to address this lacuna in analyses of environment and conflict, it may prove useful to integrate insights derived from hazard vulnerability framework such as the one presented in the Chapter 1 into the environmental scarcities model formulated by Homer-Dixon and his colleagues (Homer-Dixon, 1994).

‘Natural’ disasters can also contribute to political instability and conflict through the blatant misallocation of disaster relief resources, which in a number of documented cases has contributed to social unrest and political instability (Olson and Drury, 1997). Moreover, in a number of instances, this unrest has helped fuel armed conflict and has contributed to political change (e.g. Bommer, 1985; Cuny, 1983: 54). As Dalby has pointed out,

the Sandinista movement in Nicaragua fed on the resentment against the Somoza regime which used earthquake relief resources for its own enrichment rather than for reconstruction. The inability of the Haile Selassie government to deal with famine in the early 1970s was an important factor in its removal (Dalby, 1992a: 508).

Although disasters of this nature have long been recognized as crucial political events which can help undermine political stability (Olson and Drury, 1997) and thus ‘security’ as it is usually defined in the global political arena, such considerations seem to

have been largely ignored in discussions of environmental scarcities and acute conflict given that such calamities are not, for reasons discussed above, generally viewed as a component of the environmental *problematique*.

A partial exception to this tendency in the environment and conflict literature concerns the impact of 'natural' disasters upon the creation of environmental refugees. A number of studies dealing with such refugees (e.g. Döös, 1997; Jacobson, 1988; El-Hinnawi, 1985) have identified temporary refugees fleeing from areas affected by either slow or rapid-onset natural hazards as a distinct category of environmental refugees which presents its own particular challenges and problems. Despite the fact that most such refugees are relatively temporary, the presence of such groups in receiving areas could exacerbate environmental scarcities, social and political tensions, and perhaps even contribute to the eruption of armed conflict (e.g. Döös, 1997; Myers, 1993).

However, even in this specialized sub-literature, the underlying anthropogenic causes of 'natural' disasters, and thus the patterns of forced-migration which these calamities may provoke, are usually not elaborated upon. The recent study by Döös (1997) on the predictability of large-scale environmental migration typifies this tendency in current research on environmental refugees. In this study, the author identifies "natural disasters" as one of the numerous environmental stresses (e.g. climate change and variability, sea-level rise, soil erosion, deforestation) which underlie environmental migration. Although the role of processes of land degradation such as deforestation in exacerbating the impact of "naturally" occurring disasters is noted (Ibid: 45), the principal causal agent behind such calamities is implicitly identified as an unpredictable

and threatening Nature. Indeed, the deployment of the dominant hazards paradigm (Chapter 1) in the author's analysis is clearly illustrated by his remark that

(t)he prospects of achieving a definite skill in predicting the occurrence and magnitude of such disasters is indeed very limited. The only thing which can be stated with some confidence is that due to the increasing population the number of people affected by natural disasters is bound to increase with time. Actually, this appears to be the case (Döös, 1997: 45).

Within this perspective, the occurrence of such disasters is directly equated with the spatial and temporal distribution of hazards, the impact of which are fortuitously affected by impersonal factors such as population growth. Thus, aside from the impact of processes of land degradation and enhanced global warming, the social production of hazard vulnerability is completely ignored this analysis of environmental migration.

Hazard Vulnerability and the "Politics of Security"

As the discussion in the preceding section illustrates, there have been some limited efforts in the past to integrate matters of hazard vulnerability within debates regarding the reformulation of political concepts of security. As epitomized by the work of Pettiford (1995), these efforts have largely sought to expand, in substantive terms, current formulations of security in order to address the dangers posed by (among other things) 'natural' disasters. However, as the previous discussion of the environment and security debates suggests, framing matters of ecological sustainability and hazard vulnerability reduction as "security issues" may only serve to militarize environmental

politics and avoid discussion of fundamental issues production, consumption and inequitable resource flows.

Rather than attempting to integrate matters of hazard vulnerability reduction within an alternative security framework, the present thesis takes an opposite approach by working on the assumption that modern political understandings of security are among the principal underlying *causes* of the current ecological and environmental dilemma (Rifkin, 1991; Renner, 1991). Indeed, although the implications of framing environmental issues as threats to “security” may be ambiguous and heatedly debated, one thing is seems clear: traditional political formulations and understandings of security represent a threat to ecological sustainability and global habitability (Rifkin, 1991; Deudney, 1991). As a result, it is imperative that those working in the field of environmental protection and ecological sustainability tackle the “politics of security” by examining the key question who and what is rendered ‘secure’ by the security practices of states (Dalby, 1997). It is from this perspective that the present thesis seeks to demonstrate how national security mindsets can constitute a crucial obstacle to the achievement of socially equitable forms of ecologically sustainable development, including the reduction of hazard vulnerability.

As conceptually sound as alternative frameworks of security based on principles of cooperation (e.g. Brown, 1994) may be, such formulations of security are not widely accepted outside certain progressive circles (Deudney, 1992). As a result, instead of attempting to sweep aside traditional understandings of national security and run the risk of environmental issues being absorbed within the latter, it may prove to be far more

productive for analyses of the environment and security nexus to reverse their focus and emphasize the impact of military activities on the environment (Seager, 1993), the trade-offs and opportunity costs of military spending in light of various non-military risks (e.g. environmental hazards) to societal safety (Baldwin, 1995). From this perspective, the task of those tackling the "politics of security" is to seek and promote, in the words of Weaver (1995), the *de-securitization* of environmental issues.

Conclusion

This purpose of this chapter has been to describe the broad contours of the debates regarding the relationship between resource and environmental issues and political formulations of security, as well as to highlight the marginal position of hazard vulnerability issues within these debates. Based on these observations and arguments, the concluding section highlighted the critical perspective adopted within the present thesis regarding the "securitization" of environmental issues. Later chapters build upon the discussion presented in the previous pages by critically analyzing the role of the security practices of states (particularly, though not exclusively, the discursive dimension) in the social production of hazard vulnerability.

Chapter 3

Geopolitics, Ecopolitics and 'Natural' Disasters: A Research Strategy

The purpose of this third chapter is familiarize the reader with the research strategy which informs the present investigation of the relationship between political understandings of security and the social production of hazard vulnerability. Drawing inspiration from the recent flowering of social theory within the sub-discipline of political geography, the approach adopted in this study is based in part upon the newly emerging *critical geopolitics* perspective (for a concise review of this literature, see Dodds and Sidaway, 1994). This perspective, strongly influenced by poststructuralist theory and its attendant emphasis on language and discourse, provides a powerful toolkit for the critical analysis of the geographical knowledge underpinning the security practices of states and global politics more generally.

This approach to studying the spatial representations which underpin the practices of global politics has recently been extended by Dalby (1996a; 1992a) to include the analysis of the environmental dimensions of global politics. Although environmental issues have only recently begun to be examined from this *critical ecopolitics* perspective, the linkages between the security practices of states and questions of ecological sustainability (Rifkin, 1991) suggest that further investigation of the representation and discursive construction of environmental issues, including that of hazard vulnerability, within the context of the post-Cold War global political arena is essential.

The chapter is divided into three sections, the first of which examines the origins and principal tenets of the critical geopolitics perspective. The following section outlines

the arguments put forth by Dalby (1992a; 1996b) concerning the need to expand this perspective to include issues of environment, development and the control of Nature.

Within this section, the parallels and linkages between the critical ecopolitics perspective and recent analyses of the discursive underpinnings of hazards research and management will be highlighted. Having provided the reader with a map of the relevant theoretical terrain in the first two sections, the third and final section outlines in greater detail the approach to discursive analysis which informs the present thesis.

Critical Geopolitics

One of the key assumptions which has underpinned the study of geopolitics since its origins in the late nineteenth century is that the political and military relations between states are in large part determined by the physical environment. Geopolitical analyses have thus traditionally assumed that the natural environment and geographical setting of any given state (the existence of which, as the central unit of analysis in global politics, was taken for granted) are the key determinants of its destiny. As a result, geopolitics has traditionally been understood as being the study of the immutable material and physical determinants of global politics and as the “domain of hard truths, material realities and irrepressible natural facts” (O Tuathail and Agnew, 1992: 192). As a result of this supposedly objective materialism, geopolitics was assumed to be a largely non-discursive phenomenon “(which) is separate from the social, political and ideological dimensions of politics” (Ibid.). However, as a number of writers have argued in recent years, geopolitical analysis has always been highly politicized in nature (Dodds and Sidaway,

1994). Indeed, as O Tuathail and Agnew (1992: 192) have noted “geography is a social and historical discourse which is always intimately bound up with questions of politics and ideology”.¹

In response to the geographical and environmental determinism and unacknowledged political and ideological biases of traditional geopolitical theories, a number of attempts have been made in recent years to transcend the limitations of traditional conceptualizations of geopolitics. Some of these efforts have coalesced to form what has been called the *critical geopolitics* perspective which seeks to highlight, among other things, how traditional geopolitical theories constitute politically and ideologically charged *representations* of global politics rather than being “objective” descriptions of global political realities. Within this perspective, geopolitical theories are not uninterested analyses of the geography of global politics, they *are a part of* the practice of international relations..

In opposition to the traditional view of geopolitical theories as objective descriptions of the material conditions underlying the practice of global politics, this newly emerging perspective defines geopolitics as “a discursive practice by which intellectuals of statecraft ‘spatialize’ international politics in such a way as to represent it as a ‘world’ characterized by particular types of peoples, places and dramas” (O Tuathail

¹

Whereas geopolitical theory deals with interstate relations, political geography deals with the geographical aspects of political practice at the state and sub-state level; see Painter (1995).

and Agnew, 1992: 192).² In other words, the critical geopolitics perspective is primarily concerned with the representations of spaces and places in the practice of global politics, or what Dalby (1991: 274) has called “the politics of the geographical specification of politics”.

Critical geopolitics thus focuses on the multiplicity of ways in which *geographical* discourses, in conjunction with numerous other types of discourses (e.g. economic, institutional), underpin the practices of global politics. The discourse of the state, in so far as the latter is defined (at least in part) as a spatio-political entity, is the most prominent and fundamental of such geographical discourses within global politics. Beyond the deeply embedded and widely held view that the state constitutes the primary actor or unit of analysis in global politics, there is no better testament to the power of the discourse of the state than the observation that the *very idea* of the world being divided into a series of sovereign politico-territorial entities has largely come to be viewed as being part of the ‘natural order’ of things. A key variation on the discourse of the state is that of the discourse of the nation-state which posits that nations and states are geographically coterminous and that former represent the interests of the latter (Taylor, 1994).

Inextricably linked to the discourse of the state are the twin discourses of sovereignty and security which are also, in a very fundamental sense, geographical in

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Although analyses of the discursive practices of global politics are far from being limited to the critical geopolitics literature, the latter distinguishes itself from related research efforts in the discipline of International Relations (e.g. Walker, 1993) by its emphasis upon the representation of *political space* in global politics.

nature. The discourse of sovereignty is essential to the constitution of the state in that it serves to legitimate the notion and existence of clearly demarcated geographical areas in which centralized governing bodies are recognized and acknowledged by individuals living within these areas as the highest source of political authority (i.e. internal sovereignty), an authority which is also recognized and acknowledged by other sovereign states (i.e. external, or juridical, sovereignty). The discourse of sovereignty thus acts to legitimize and naturalize the exclusive responsibility of the state for regulating the activities which take place within its specific territory .

Inextricably linked to the discourse of sovereignty is that of security. At its most basic level, this discourse essentially refers to the goal of protecting the sovereignty of the state against threats posed by other states, albeit in practice this has also meant addressing internal challenges to the sovereignty of the state. Security is thus implicitly defined as an exercise in *spatial exclusion* of threatening 'others', regardless of whether the latter originate within or outside the borders of the state (Dalby, 1992a). However, as the discussion in Chapter 2 concerning the security practices of states suggests, defining the geography and problem spaces of 'security' in this way only exacerbates insecurity of marginalized social groups within the state.

The point of these observations is to highlight the degree to which the idea of the state, as well as the concepts of sovereignty and security which underpin it, are among the fundamental discursive building blocks which are used to describe global politics. Their primacy in determining the orientation of global politics is such that the possibility of thinking about political community and global politics *outside of these parameters* is

severely restricted. Indeed, what renders these discourses so powerful is the degree to which they are deeply embedded and usually remain unquestioned (Walker, 1993).

On a larger global scale, a number of other geographical discourses have served to divide the globe into discreet regions of hemispheres. Geographical categories such as East-West, North-South, First, Second and Third World as well as discourses of globalization are widely used to describe the “geography” of the world in which we live. However, such descriptions are neither innocent nor ‘objective’ representations of the world. Indeed, all of these geographical discourses are historically contingent and socially-constructed cartographies. Nevertheless, such spatial categories are usually taken-for-granted and tend to go largely unquestioned by academics, policy makers and the general public and, as a result, are used to define the ‘problem spaces’ of global politics (Hewitt, 1995a).

From the perspective of critical geopolitics, the act of describing a place is not simply to define a location or setting, for “simply to *describe* a foreign policy problem is to engage in geopolitics, for one is implicitly and tacitly normalizing a particular world” (O Tuathail and Agnew, 1992: 194). The description of the geographical context of foreign policy problems is thus viewed within this perspective as being in and of itself a highly political act which serves to

trigger a series of narratives, subjects and understandings. For example, to designate an area as ‘Islamic’ or ‘Western’ is not only to name it, but also to brand it in terms of its politics and the type of foreign policy its ‘nature’ demands (Agnew and Corbridge, 1995: 48).

Given the political import of such representations in global politics,³ the critical geopolitics perspective seeks to unearth and highlight the geographical discourses which underpin the practices of statecraft by analyzing the narratives, concepts and symbolic gestures embedded within particular articulations of foreign policy. The deployment of geographical discourses can be discerned by analyzing the manner in which particular places, peoples and dramas are 'scripted' in representations of foreign policy issues. The metaphor of script is utilized here "to describe a set of representations, a collection of descriptions, scenarios and attributes which are deemed relevant and appropriate to defining a place in foreign policy" (O Tuathail, quoted in Dalby, 1996: 596). In so far as it "conjures up images of the script or film writer constantly re-writing or changing a storyline or narrative" (Dodds, 1993: 72), the 'script' metaphor aptly describes the approach of critical geopolitics perspective to the analysis of the specification of political space.

By scrutinizing the discursive construction of matters of global politics, such analyses may contribute to the formulation of alternative frameworks for the analysis of foreign policy problems, including those related to national and international security. Although most of the work done thus far from the critical geopolitics perspective has concerned issues of military security, international political economy and development

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Examples of more detailed analyses of the impact of representations of political space in global politics can be found in Dalby (1996b; 1988) and O Tuathail (1992).

studies (Dodds and Sidaway, 1994), environmental issues have also begun to be treated by practitioners of critical geopolitics.

Critical Ecopolitics

In addition to examining how places, spaces and events are represented in global politics, Dalby (1996b) has argued that critical geopolitical analyses need to be extended in order to include the environmental dimensions of global politics. Noting that the discursive underpinnings of modernity include both “the (geopolitical) production and control of space *and* the (developmentalist) production and control of nature”, Dalby (1996: 596) asserts that “a critical geopolitics of modernity can usefully be extended to incorporate questions of the discourses of the control of nature as a necessary corollary to the themes of the control of space”. This task necessarily involves a critical examination of the language of environmental politics, or “ecopolitical discourse”, by “looking both at the conceptual infrastructure of academic debate as well as the practical reasonings used to legitimize government and NGO policy” (1992a: 517).⁴

The political order of modernity is premised upon the control of both space and nature, the two of which are interconnected and inextricably associated with the processes of the enclosure, colonization and commodification of nature which lie at the heart of the

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While the literature concerning the discursive practices which underpin problematizations of environment and development is vast (e.g. Crush, 1995; Peet and Watts, 1996), what makes the concept of critical ecopolitics particularly useful in the context of the present thesis is its emphasis on the linkages between the security (i.e. control of space) and developmental (i.e. control of nature) practices of states.

project of economic modernization (Rifkin, 1991). More specifically, the political control of space in terms of claims of state sovereignty, as well as property rights arrangements and land use planning at the sub-state level, is generally viewed as an essential prerequisite for the establishment of economic development policies and programs which involve the commodification and control of nature. From this perspective, development practices are clearly dependent upon the provision of 'security' in terms of the spatial-exclusion of threats to 'social order', regardless of whether they originate within or outside the boundaries of the state.

Noting that the discursive practices of global environmental politics operate effectively to separate questions of ecological sustainability from those of development (Middleton *et al.*, 1993), Dalby (1996a) asserts that this separation is premised upon powerful modern dichotomies of nature and culture and the assumption that humans are somehow separate from their environment. This assumption is crucial in so far as the ontological separation of humanity from nature, coupled with the assumption that the latter (usually signified as the 'environment') exists primarily as a source of raw materials to be utilized by humans to continually increase their material well-being, is a crucial underlying factor behind the destruction of nature (Escobar, 1996). Nevertheless, despite such criticisms, discussions of development and 'environmental' problems continue to be implicitly guided by instrumentalist representations of nature within the sphere of global politics. Thus, just as the geopolitical discourses of the state, sovereignty and security must be critically evaluated, it is essential that representations of the development and

environment nexus in global politics (which unavoidably involves issues regarding the control of nature) be critically scrutinized.

There are crucial parallels and linkages between this critique of the representational practices of global ecopolitics and Hewitt's (1995a; 1995b) recent analyses of the discursive underpinnings of hazards research and management. Much in the same way as mainstream formulations of 'sustainable development' fail to acknowledge the role of past development practices in creating scarcity and poverty-driven environmental degradation, conventional explanations of disaster causation downplay or completely ignore the relationship between past development practices and disaster losses (both human and economic) among politically and economically marginalized groups. Instead, disasters and development are by and large viewed as antonyms, with the latter being the ultimate solution to the former given that those who are usually hardest hit in such calamities are the poor (Hewitt, 1995a).

Furthermore, as in the case of most discussions of the environment and development nexus, "nature" and "culture" are assumed to be separate spheres within most hazards research although recent studies suggests that such dichotomies are often analytically untenable (Paul, 1997). As Shaw (1992) forcefully argues in her examination of flood hazards in Bangladesh, the differential consequences for men and women of extraordinary floods (with women being harder hit by flood losses) suggests that the definition of what constitutes "hazard" in specific socio-geographical contexts is partly constituted by social and cultural factors rather than simply by hydrological parameters.

Drawing inspiration from the critical geopolitics/ecopolitics literature, I propose to examine the relationship between political understandings of security and hazard vulnerability by analyzing the impact of discourses of national security upon hazard vulnerability (Chapter 4) as well as the discursive strategies which underpin practices of hazard management (Chapter 5). The purpose of the latter chapter is to illustrate how conventional hazard management practices in many ways parallel and implicitly reinforce the security practices of states, thereby exacerbating the social production of insecurity and vulnerability. Having done so, I will then attempt in the conclusion of this thesis to outline how matters of hazard vulnerability may be usefully integrated within discussions regarding the nexus of environment and security.

Critical Ecopolitics: Discursive Approaches to Environmental Politics

Having described the theoretical terrain upon which the present thesis rests, the purpose of this last section is to set out in greater detail the specific research strategy which informs this investigation. Given that the key concepts (e.g. security, disaster, vulnerability) which constitute the substantive content of the following analysis are highly contested and open to differing interpretations rather than being objective “things” or states of being, the present investigation relies primarily of discursive analyses. More specifically, the discursive analysis in the closing section of Chapter 4 is derived from critical academic analyses (e.g. Salih, 1990; Duffield, 1990a; 1990b) and official reports (AID, 1986; North South Roundtable on Sudan, 1986). The analysis developed in Chapter 5, on the other hand, focuses almost entirely on two hazard management manuals

(OAS, 1990 and UNDRO, 1991) which, it is argued, typify the dominant technocratic approach to hazard management (Chapter 5).

However, although the bulk of the analysis consists of a critical analysis of the representation of matters of security and hazard vulnerability in a number of official documents and academic texts, it is nevertheless supplemented by a small number of responses to particular queries sent to a number of academics working in the fields of hazards research and security studies. The characteristics of these two research strategies are discussed in greater detail in the two sub-sections below.

As discussed in the Introduction, the term “discourse” is utilized in the context of the present thesis to signify the implicit or taken-for-granted conceptual and theoretical frameworks through which we understand the world. It does *not* thus refer here simply to speech or written statements; it signifies, rather, the “sets of socio-cultural resources used by people in the construction of meaning about their world and their activities” (O Tuathail and Agnew, 1992: 192-193). This definition of discourse is roughly equivalent to the consensus creating aspect of Gramsci’s conceptualization of *hegemony* in so far as the power and significance of discourses resides in the fact that they constitute ‘hidden’ and often unquestioned assumptions which determine the parameters of what can legitimately be said or done within social struggles (Agnew and Corbridge, 1995). However, discourses are not *so* deeply embedded that they cannot be contested. Indeed, the hegemony of dominant discourses is often contested and is the site of intense struggles.

One of the fundamental premises underpinning poststructuralist inspired approaches to geopolitics is that language and discourse do not simply reflect reality, they help *constitute* reality. Discourses are thus not mere textual abstractions which simply reflect an external reality, for it is only through language that human affairs, including those related to politics, can be understood and described. Nevertheless, it must also be kept in mind that discursive practices are inseparable from *material* practices. Indeed, it is the dialectical interaction of discursive and non-discursive (i.e. material) practices which constitutes 'reality' (Painter, 1995: 12). Unfortunately, the analysis of discursive practices is often done in isolation from the material context in which discourses are embedded while materialist analyses by and large ignore the discursive construction of their concepts, theories and objects of study (Ibid). In order to avoid such pitfalls, it is essential to complement materialist analyses with investigations of the discursive construction of the 'realities' under study.

In any case, as discussed in the two previous sections, it is essential that hegemonic discourses of security, development, disaster and vulnerability be problematized, for these often unquestioned and taken-for-granted assumptions which underlie the practices of global environmental politics may only serve to reproduce global inequalities and contribute to insecurity. This is particularly true in the case of discourses of national security which often remain largely uncontested outside certain critical intellectual circles. By unearthing and exposing assumptions concerning the geographical specification of political practices, the critical geo/ecopolitics perspective

contributes to the formulation of alternative ways in which matters of security, environment and development may be framed.

The specific approach to discursive analysis adopted in the following two chapters draws heavily upon Fairclough's (1994) recent framework for conducting discourse analysis. The strength of this particular framework lies in its combination of the insights and methods of textual analysis drawn from the work of linguists along with the more theoretical insights of Michel Foucault concerning the socially-constitutive function of discursive practice.

The framework in question is three-dimensional in nature and seeks essentially to link the analysis of texts to broader processes of social change and struggle. At the micro-level, there is the analysis of "discourse as text" which consists of the analysis of the form and content of specific texts (either written or spoken) by focusing upon elements of vocabulary, grammar, cohesion and text structure (Fairclough 1994: 137-199). At the macro-level of analysis one finds the analysis of social practices which includes both discursive and non-discursive elements. Mediating these two levels of analysis is that of "discursive practice" which consists of the analysis of processes of production, distribution and consumption of texts and the constraints related to these processes. Needless to say, all three of these dimensions are fundamentally inter-related.

Although Fairclough (1994) utilizes a somewhat broader definition of the term discourse than authors such as Agnew and Corbridge (1995), his approach to the analysis of discourse nevertheless largely corresponds to the definition and usage of the term in the critical geopolitics literature. Fairclough identifies three key functions of discourse

which he emphasizes are interconnected in a multiplicity of ways. The first of these is the *ideational* function of discourse which essentially refers to the substantive content or “ideas” of a particular sample of discursive practice. The second key facet of language practice is its *identity* function. Discourses contribute, both explicitly and implicitly, to the creation and reinforcement of a number of identities including those of the text producer, the intended audiences of the text, and those social groups designated within the text. The third function of discourse identified by Fairclough is its *relational* function. The latter refers to the “various forms of interaction which are structured in particular ways and involve particular sets of participants (e.g. interviewer and interviewee), which can be used in various disciplines or institutions and are thus compatible with various discursive formations (so there are medical, sociological, job and media interviews)” (1994: 51-52).

Crucial aspect of the analysis of all of these functions is the need to investigate the manner and degree to which these are ideologically invested. The concept of ideology is defined in this context as “significations/constructions of reality (the physical world, social relations, social identities), which are built into various dimensions of the forms/meanings of discursive practices, and which contribute to the production, reproduction or transformation of social relations of domination” (Fairclough, 1994: 87).

In any case, these three functions of discourse together contribute to the construction of social identities, social relations and systems of knowledge and belief. Although the use of the term discourse in most of the critical geopolitics literature is

usually restricted to the ideational functions of language, the analysis of the other two dimensions of discourse is essential.

Conclusion

Albeit admittedly brief, the preceding examination of the theoretical foundations and research framework which informs the present thesis does nevertheless serve to provide readers with a useful guide to the investigative approach adopted in the present study. Having described the conceptual terrain which characterizes the field of hazards research on one hand and security studies on the other, the following two chapters focus directly on the analysis of the nexus of security and hazard vulnerability.

Chapter 4

Environment, Security and Hazard Vulnerability

“...natural disasters may either be used for political purposes or have serious political repercussions. That they may provide the opportunity for rebuilding and rethinking not just physical but also social structures makes them potentially crucial periods for those wanting to change as well as those wanting the preservation of the status quo” (Pettiford, 1994: 215).

As discussed in Chapter 2, the purpose of the present thesis is *not* to propose an expanded and more comprehensive conceptualization of security which incorporates matters of ecological sustainability and hazard vulnerability. Instead, the analysis developed in the present chapter follows an alternate intellectual route by proceeding from the perspective that conventional political understandings of security are part of the problem of, rather than a potential solution to, unsustainable resource use and hazard vulnerability (e.g. Deudney, 1991; Rifkin, 1991). By examining the impact of discourses of national security in supporting and maintaining the social, political and economic processes which contribute to the social production of hazard vulnerability, the analysis presented in the pages below seeks to illustrate how traditional notions of security can exacerbate vulnerability to natural hazards. In so doing, the analysis highlights the importance of addressing the “politics of security” (Dalby, 1997) in analyses of the social production of hazard vulnerability.

The analysis is divided into three sections, the first of which examines how the discursive and material components of the security practices of states are inextricably linked to the socio-political and economic processes involved in the social production

of hazard vulnerability during the *pre-disaster* period. The second section examines how the security practices of states can inhibit the disaster relief and recovery process and thus maintain and even reinforce conditions of vulnerability during the *post-disaster* period. It is crucial to keep in mind that the analytical separation of the pre-disaster and post-disaster periods is purely for purposes of analytical clarity, for in reality they are in many ways one and the same: the post-disaster period is also the pre-disaster period for a potential disaster in the future.

The third section serves to contextualize some of the arguments presented in the previous two sections by examining the causes and consequences of the Sudanese famine of 1984-1985. By (re)reading accounts of the etiology and responses to these particular calamities *from a security perspective*, the analysis developed in this last section illustrates how dominant discourses of security can constitute a crucial ideological root cause (Blaikie *et al.*, 1994) of 'natural' disasters by reinforcing the social production of vulnerability prior to hazardous events as well hindering disaster management efforts which could contribute to reducing hazard vulnerability in the future. The fourth and final section briefly examines the implications of the analysis presented in the preceding three sections for future research on the environment and security nexus and concludes by emphasizing the need for analyses of the social production of hazard vulnerability to take into account the "politics of security" (Dalby, 1997).

Development, Security and the Social Production of Hazard Vulnerability

Until the mid-1980s, the study of developing countries was largely dominated by analyses of (under)development, with the literatures on hazards and disaster being no exception. Indeed, within these literatures, matters of hazard vulnerability and disaster response have by and large been framed either as a problem of, or for, development. However, in the last decade a number of studies have begun to point to security arrangements as a neglected dimension of the Southern *problématique* (Adibe, 1994), with some observers suggesting that issues of development and security must necessarily be examined in tandem (e.g. Walker, 1990). It is from this perspective that this first section seeks to examine the nature of the nexus of economic development and security and, by so doing, underscore the impact of the security practices of states upon hazard vulnerability.

Hazard Vulnerability and the Insecurity Dilemma

As Nandy (1992) has pointed out, the promotion of development and the provision of 'security' together constitute the primary *raison d'être* of the modern state. Moreover, in so far as these are viewed as mutually dependent objectives, questions of development are inextricably linked to those of security (Lopez, 1986). The modern state plays an integral role in the promotion of economic development given that projects of economic modernization take place within its territorial jurisdiction and are typically carried out through its administrative institutions (Ayoob, 1992). In so doing, the state serves as a mechanism of mediation between capital and nature by regulating

access to and the exploitation of resources within its borders (Escobar, 1996). More specifically, it facilitates processes of development by creating and maintaining the political and juridical mechanisms (e.g. property rights systems) which are deemed to be essential prerequisites for assuring economic development.

Thus, to the degree that the successful promotion of economic development depends upon the presence of stable social and political institutions, the protection and maintenance of 'social peace' and the existing socio-political and economic order is an essential prerequisite for the successful implementation of development policies (Ayoob, 1992: 63-64). As a result, the second principal task of the state, that of the provision of 'security', is generally understood in terms of the protection of the *status quo* (Chapter 2). However, as Pettiford and Smith have argued,

(i)f security is seen as the maintenance of minimum values, then it can be used to justify keeping internal order at any cost. This has led to policies of repression and patterns of expenditure that serve extremely narrow sectional interests. The survival of a particular regime became (during the Cold War) the essence of security within a number of developing states. Such an arrangement proved both useful to the Superpowers and some developing states' governments. If the interest of the regime in power is dressed up in the language of national security to lend it an air of legitimacy internationally, in reality, it is only possible to recognize regime security (Pettiford and Smith, forthcoming: 4).

Indeed, in the context of states which lack internal political cohesion and legitimacy (Chapter 2) appeals to national security can be utilized by state élites to justify the use of national security measures and the curtailment of civil liberties in order to maintain their hold on power and assure the necessary conditions for the

implementation of development policies and projects. Indeed, as Naidu (1991: 3) has pointed out, the imperative of the “economic development of the nation” is one of the principal grounds upon which national security measures are often invoked. Such measures include, but are not limited to, military operations against domestic opponents of the state or regime in power, police measures (e.g. arrest and detention, running of prisons and concentration camps, coercive enforcement of laws and regulations), secret service operations (e.g. blackmail, abduction, kidnapping, assassination) and, particularly important in this context, forced relocation (Naidu, 1991; Gilbert, 1994)

Moreover, in many contexts, the imperatives of development and the provision of security are so inextricably intertwined that they are viewed as being one and the same. In his analysis of what he describes as the ‘national security ideology’ which emerged among Latin American states in the 1960s and 1970s, Lopez (1986) briefly examines the fusion of matters of security and development within the security discourses of a number of these states. However, it should be noted that while the study in question focuses specifically on Latin America, Lopez does points out that similar ideologies can be found to operate in others parts of the world.

This national security ideology, which mixes revived geopolitical concepts, theories of bureaucratic centralization, and axioms of economic modernization, posits that the survival of the nation is inextricably linked to the economic modernization and development goals of the state. More specifically, it emphasizes the territorial dimension of the nation and the need to assure the territorial integrity of the state (which constitutes the political embodiment of the nation) by effectively harnessing the

territory, population and resources of the nation through economic development.

Within this framework, the state thus plays a central role in the promotion of development in so far as 'national security' is largely defined in terms of state-directed economic development. Indeed, from this perspective, underdevelopment is viewed as *the* principal security challenge. This viewpoint is succinctly summarized in a statement by one senior military official (cited in Lopez, 1986: 85) who argued that "there can be no security without development just as there can be no development without security".

However, by framing matters of development as a security issue, such a conceptualization of security transforms those who oppose the particular development policies of the state, which supposedly embodies the will of the nation, into threats to security. As Lopez (1986: 86) points out, "by defining the security issue as one of economic development and philosophy, national security ideology sets up the scene for a very large number of those who disagree with either the substance of economic decisions or the style of its implementation to be labelled by the ruling elite as 'enemies of the state'". Furthermore, he argues that

the security component of national security ideology provides ruling elites with an extension of the rules of war into the national social and political order, layered with an imperative of economic development as the ultimate defense. As such, it identifies the numerous enemies for elimination, those who attempt to reform or challenge economic policy, *and* provides that they (and suspected associates) be dealt with quickly and violently (Lopez, 1986: 87).

While Adibe (1994: 501) has noted that “it is increasingly being acknowledged that many developmental problems being confronted by Southern states stem from the oppressive and exclusionary character of their political systems”, it has also been convincingly argued that, in light of the insecurity dilemma which characterizes the domestic political landscape of a number of developing states, the promotion of development often necessitates the use of repressive measures (Wolpin, 1986). In other words, élite aspirations for development may themselves thus prompt the use of repressive measures against those within the state who oppose the development policies of the regime in power.

The lack of political legitimacy and social cohesion which characterize a large number of postcolonial states of the ‘South’ is a determining factor underlying the adoption of particular security strategies by the regimes of these states. More specifically, regimes which are preoccupied with their short-term security and survival often rely upon the use of coercive military force (Job, 1992: 28). The three general types of security strategies adopted by such states include militarization (i.e. the creation and arming of substantial military/police forces), measures of repression and state terror, and the use of diversionary tactics (i.e. the designation of external enemies to distract from the situation at home). The first two of these strategies are closely linked in so far as studies have shown a strong correlation between rates of militarization per capita and the use of repression and state terror as a standard element of governmental policy (Ibid). Meanwhile, other studies suggest that there is a strong

correlation between development policies and economic dependency on one hand and state repression on the other (Wolpin, 1986).

It is within such political contexts that individuals and social groups opposed to existing socio-political and economic arrangements and state-led development efforts can be deemed to pose a threat to 'security'. This is particularly true in the context of conflicts between nations and states over development projects and access to natural resources in hinterland areas inhabited by nations opposed to the economic development agenda of the state. In such cases, the demands and rights of nations are often viewed by the state as an impediment to development and thus a threat to "national security" (Clay, 1994; Nietschmann, 1994). As a result, those seeking to promote constructive social change and empowerment (including indigenous and environmental groups) are often deemed to be threats to security (Hill, 1994; Wolpin, 1991: 106). A prominent example of such conflicts can be found in Brazil where a number of environmental and indigenous groups opposed to the development policies of the state have been identified by the Brazilian military as potential threats to the security of the Brazilian nation (Alario, 1993; Albert, 1992).

It is at this point that the linkage between the discursive as well as material practices of security and the social production of hazard vulnerability begin to appear. By restricting the access of politically marginalized groups to the biophysical resources on which their livelihoods depend for the purposes of "development" and in the name of "national security", such groups are often compelled to overexploit what resources are available to them (which may increase the frequency or intensity of natural hazards)

or migrate towards areas which are more prone to hazards including drought and flood (Wijkman and Timberlake, 1984). Indeed, in pointing out that exposure to natural and technological hazards differs among social groups, Johnston (1995) argues that such differential exposure

is often the result of government induced and/or sanctioned action: powerless groups and their rights to land, resources, health, environmental protection and thus, their future, are expendable in the name of national security, national energy and national debt (i.e. development)...human environmental rights abuses occur because people are in the way of progress and "national" needs supersede individual and community concerns. Thus people find themselves forcibly relocated while governments and industry build dams, expand export-oriented agriculture, develop international tourist facilities, and set aside "wilderness" to save biocommons and attract foreign tourist dollars (Johnston, 1995: 113).

In addition to the use of repressive and coercive measures in maintaining and supporting often highly inequitable socio-political and economic arrangements, the material dimensions of national security practices can also directly contribute to the social production of hazard vulnerability through environmental modification. Indeed, the military operations of states (in both peace and wartime) as well as sub-state opposition forces can themselves contribute to hazard vulnerability (Noltimier, 1984). Examples of such impacts abound: underground nuclear weapons testing can, in some cases, contribute to triggering earthquakes (Whiteford, 1989), the bombing of dikes (Lacoste, 1977) or dams (Bergström, 1990) may cause massive flooding, and the destruction of vegetation through the use of defoliants may contribute to soil erosion

(thus increasing vulnerability to drought) and flooding (Wolpin, 1991). There is also the purposeful destruction of crops which can, by itself or in combination with the effects of drought, pose an immediate threat to food security. Finally, activities related to the preparation for armed conflict can also contribute to hazard vulnerability through the widespread ecological damage caused by military training exercises (Ibid).

Before moving on, it should be noted that while an understanding of the internal security dilemmas of postcolonial states in the 'South' is crucial to understanding the socio-political processes which underlie the social production of hazard vulnerability, the analysis of these dilemmas cannot be divorced from the external security predicament in which these states find themselves. Indeed, the broader geopolitical understandings of national and international security which have animated interstate relations since the Second World War have also contributed to increased hazard vulnerability worldwide.

From a broad global perspective, the diffusion of notions of modernization and development among states in the 'Third World' was itself the result of the security concerns of the superpowers during the Cold War. As David Slater (1993) has shown, post-World War II development efforts were "enframed" by the geopolitical imagination of the Superpowers. In light of these observations, it can be argued that Cold War formulations of security in some contexts constitute an important, albeit admittedly diffuse, ideological "root cause" (Chapter 1) underlying processes of

economic marginalization and increased hazard vulnerability among disadvantaged groups in the developing countries.¹

Security, Disaster Management and the (Re)production of Vulnerability

In addition to exacerbating hazard vulnerability through its support and implication in development policies and projects, the security practices of states also often serve to reinforce hazard vulnerability *in the wake* of disaster. More specifically, in situations where hazard vulnerability is closely related to conditions of social and ecological marginalization, the security practices of states enhance hazard vulnerability through the re-assertion of an inequitable pre-disaster social order. This point is particularly crucial given that, as the quotation at the beginning of this chapter suggests, the occurrence of large-scale disasters can act as a catalyst for social change in so far as it presents an opportunity for rebuilding the physical and social structures of society in a more equitable manner. Indeed, as Olson and Drury (1997) suggest, the post-disaster period is sometimes, though certainly not always, a time of rapid social change and instability. Seen in this light, large-scale ‘natural’ disasters can clearly pose a challenge, at least in some contexts, to state apparatuses charged with maintaining “security”.

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This point should not be taken too far however given the difficulty of tracing causal linkages between vulnerability and diffuse political, economic and ideological “root causes” (on this point, see Blaikie *et al.*, 1994: 30-32).

As a number of observers have pointed out, in the wake of devastating disasters many governments seek *primarily* to reassert pre-disaster social conditions and limit social change. Pettiford, for example, has forcefully argued that

for many Third World elites the main priority after a disaster is that relief not be connected with any long term plans for a reorientation of society. Disasters rarely prove life-threatening for higher levels of society, who can afford the luxury of precautionary measures. For these sectors of society, control of a disaster is another way of maintaining the status quo (Pettiford, 1994: 204).

In somewhat different terms, Hewitt makes a similar argument in commenting that

it seems to me quite clear, often from the media and always wherever I have been to a disaster area, that governments behave as though this (i.e. disasters as threats to security) is the case. Their actions are not restricted to, and often show no obvious priority for, bringing relief to victims, as opposed to controlling and containing the situation. But that is not always the case and perhaps, it need not be. Evidently, it also has to do with the setting of priorities, the 'culture' of the state forces and the real preoccupations of government (Hewitt, 1997).

This last comment points towards the most prominent and formal linkage between matters of disaster management and political formulations and practices of security which consists of the absorption of the former in numerous countries by civilian defense organizations (Gilbert, 1995). In providing the model for organized disaster preparedness, such organizational arrangements not only extend the demands of national security to civilians in times of disaster (Hewitt: 1995b: 333), they also result in the "extension or redeployment of (wartime) civil defense measures, organizations and approaches...(to) emergency measures planning, readiness and

responses" (Hewitt, 1997) in dealing with 'natural' disasters. Although this civil defense model of disaster preparedness originally evolved in the United-States and Europe in the 1950s and 1960s, disaster planners from the advanced industrialized countries often advise their counterparts in developing countries to adopt similar organizational models in which military organizations play a central role (Cuny, 1983).

Among advanced industrialized countries, military personnel are often deployed for disaster relief purposes. The use of U.S. military forces during and after the great Mississippi floods of 1993 is but one example. Furthermore, military forces from advanced industrialized countries are also on occasion deployed in developing countries for disaster relief. While the use of military personnel and resources is certainly advantageous in some contexts, it can also have severe drawbacks in others (Cuny, 1983: 227-229). Indeed, as Cuny has pointed out, in countries where the power of the military is utilized to support a repressive government, the arrival of military forces in a disaster situation may only increase the insecurity of those affected by the disaster (Ibid: 229).²

The case of threats made by the military against indigenous groups as well as development and aid workers participating in the Kuchuba'l Reconstruction Program in the highlands of Guatemala after a devastating earthquake in 1976 is a prime example

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The literature on the use of military forces in disaster relief operations (particularly in the case of civil war) is extensive (e.g. Anderson, 1994). Given the existence of this literature, the use of military personnel in disaster situations does not constitute one of the main focuses of the present studies since it is the most prominent and debated facet of the disaster/security interface.

of the problems presented by the adoption of civil defense measures in contexts of political illegitimacy. By utilizing earthquake reconstruction efforts as a springboard for the organization of collective action and raising awareness among indigenous groups in the countryside (who received virtually no assistance from the government after the quake), this particular program was viewed as a potential challenge to the status quo and thus a threat to the security of the regime given its potential to politicize such groups (Pettiford, 1994: 211; Cuny, 1983: Chapter 10). As a result, these reconstruction efforts led to increased political repression towards indigenous groups, with military forces threatening OXFAM personnel and even killing local leaders whom the regime in power viewed as being 'troublemakers'. Many were killed by the military while others sought exile in neighbouring countries (Blaikie *et al.*, 1994: 171).

In a somewhat similar vein, the conditions of social instability which sometimes characterize areas afflicted by large-scale 'natural' disasters have in the past been utilized by repressive states to deal with political opponents. For example, some observers have suggested that the general confusion and high death toll associated with the Guatemalan earthquake of 1976 was utilized by the regime in power to kill some of its opponents (Pettiford, 1994: 210).

Beyond the deployment of civil defense forces in order to maintain "law and order", perhaps the prominent strategy through which constructive social change in the wake of disaster may be inhibited is the inequitable distribution of disaster aid. As Susman *et al.* (1983: 280) argued in their seminal text on vulnerability analysis "(r)elief aid, which reflects dominant interests and prevents political upheavals,

generally works against the classes who suffered most in a disaster and will do so in the future". More recently, Albala-Bertrand (1993: 102) has formulated a similar (albeit somewhat less dogmatic) argument, noting that it is often the most economically and politically powerful groups which benefit the most from the influx of disaster aid. In any case, it seems clear that the position and 'security' of élites is often maintained and reinforced in the wake of disaster through the funnelling of financial aid to these groups and by the restoration of law and order, even though it is this very order which exacerbates the insecurity and vulnerability of poor and less politically powerful groups. This argument is also echoed by Hewitt who notes that

cynical governments will make a great show of concern for the needy and hurt victims while actually deploying resources to restore state infrastructure and productive activities ('make hay'), not directly helping the worst-affected, diverting essential resources elsewhere and using disaster aid funds for reconstruction favouring their own interests...rather than survivors (Hewitt, 1997).

In summary, modern political understandings of 'security' can serve to inhibit the effective deployment of disaster response measures by inhibiting the effective deployment of relief, rehabilitation and recovery measures which take into account the need for social change. Such a situation not only worsens the impact of a hazardous event, it can also exacerbate vulnerability to future hazards. This argument is echoed by Blaikie *et al.* (1994: 237) who note that groups seeking to promote social change through the reduction of hazard vulnerability have also been occasionally deemed to constitute a threat to security.

Disaster and Social Conflict

While the regime in power may seek to re-establish the status quo and thus re-assert the pre-disaster social order, such efforts are often contested. It has long been recognized that social conflict can arise from relief and reconstruction efforts in the post-disaster phase (Quarantelli and Dynes, 1976). In those cases where the regime is unresponsive to the needs of those affected by disaster, social conflict can lead to outright political instability (Olson and Drury, 1997; Albala-Bertrand, 1993: 105; Cuny, 1983: 54).

Among the most prominent documented cases of political instability where 'natural' disasters have acted as a trigger by highlighting and exacerbating socio-political and economic inequalities are the 1971 civil war in Eastern Pakistan (which led to the formation of Bangladesh), the 1979 revolution in Nicaragua, political upheavals in Guatemala during the late 1970s and a number of regime changes in Sahelian countries in the same period. In numerous cases, including Guatemala, Nicaragua and the Philippines, disasters have led to increased repression where regimes fear that social mobilization prompted by disasters may lead the contestation and destabilization of their regime (Albala-Bertrand, 1993: 197). In less extreme cases, numerous governments (or at least their leaders) have been forced to resign as a result (at least in part) of their inadequate responses to disasters (e.g. Honduras in 1975, Jamaica in 1979). In other cases, social conflict arising from disasters have led to political concessions (Philippines, 1976; Ethiopia, 1974) including the redistribution of land in the case of the Philippines (Albala-Bertrand, 1993; 196). As these examples

strongly suggest, 'natural' disasters are clearly important political events which can have potentially far-reaching implications for the maintenance of security understood as the preservation of state institutions and the regime in power.

Despite the availability of considerable anecdotal evidence, the relationship between 'natural' disasters and political instability has, surprisingly enough, only recently begun to be examined in a systematic manner. In a preliminary quantitative analysis of this relationship, Drury and Olson (1997) confirm the linkage, noting the data clearly suggest the presence of an inverse relationship between equity and instability as well as a positive relationship between pre-disaster instability and post-disaster instability. Somewhat ominously, they also point out what seems to be an inverse relationship between regime repressiveness and instability. These observations lead the authors to the "distasteful" conclusion that, even though disasters may provide popular movements or regime critics with a space for political expression and thus contribute to the promotion of democratic practices, it is "a *prudent* policy for a regime interested in stability and possibly even self-preservation" (Ibid: 12 [emphasis added]) to utilize repressive measures!³ In any case, the authors conclude their brief study by pointing out that this research is still in its preliminary stages and that a robust model which explains more explicitly how disasters affect political systems has yet to be developed.

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Underlying this conclusion of course is the implicit assumption that maintaining political stability and social order, no matter how inequitable the latter may be, is always the most appropriate goal.

If the potential impact of ineffective or inadequate disaster response upon social and political instability is widely recognized, though not well understood, what is perhaps a relatively new idea is that awareness of vulnerability to possible *future* disasters may also be prove to be source of social activism and conflict (Rochford & Blocker, 1991). Traditionally, only technological disasters were viewed as being a potential basis for collective protests in light of the obviously human origins of such events. Given that 'natural' disasters have traditionally been viewed as "Acts of God" outside human control, these were believed to provide no basis for collective protests (with the exception of problems over relief and reconstruction efforts) since no one could be *blamed* for the tragedy.

However, recent research suggests that, at least in the context of advanced industrialized countries, this may be changing. Increasing awareness of the human factor in so-called 'natural' disasters is increasingly making such events into potential sites of political conflict (Stallings, 1988). The key factor, as Rochford and Blocker (1991) have argued, is the manner in which such disasters are framed. Drawing upon a case study of a disastrous flood in Tulsa, Oklahoma, the authors argue that although the *master frame* of natural disasters as calamities beyond human control still dominates, the level of political conflict surrounding such disasters could very well expand in the future as grassroots organizations and social movements attempt to *reframe* such events as 'unnatural' disasters caused in part by human actions (1991: 188-189).

While Rochford and Blocker's analysis is quite useful and provocative, it is important to point out that while the idea of *unnatural* disaster may only be emerging

among victims of such disasters in the 'North' at the present time, such disasters have long been recognized as unnatural in the 'South'. This is perhaps due in part to the fact that, particularly in the context of developing countries, 'natural' disasters often highlight and exacerbate social, economic and political inequalities (Cuny, 1983). Awareness of the anthropogenic causes of such disasters has in turn led in some contexts to the contestation of hazard vulnerability.

The formation of the Citizen's Disaster Response Network (CDRN) in the Philippines is one example of this tendency (Delica, 1993). In addition to emergency relief measures, this network emphasizes advocacy activities which are aimed at changing state policies which affect *vulnerability*. Among the issues addressed in CDRN's vulnerability reduction efforts are those of foreign debt, human rights, environment and development (Ibid: 246). Other examples of the social contestation of vulnerability to natural hazards are the campaigns against flood vulnerability in the poorer neighbourhoods of Rio de Janeiro (Blaikie, *et al.*, 1994: 237) and the famous Chipko movement against deforestation which contributes, among other things, to increased flood vulnerability in rural areas of India (Sachs, 1995: 10). These examples suggest that awareness of the human factors underlying hazard vulnerability (and *not* simply dissatisfaction with disaster response measures) already provides a basis for increased politicization and social change.

Nevertheless, it is essential to keep in mind that conflicts over vulnerability can rarely be separated from conflicts arising from relief and recovery efforts since awareness of vulnerability is greatest in the wake of disaster. Indeed, assuming that a

regime is responsive to the voices of those affected by disaster, political will for dealing with matters of hazard management “is most likely to originate from a major failure to deal with a disaster” (Blaikie, *et al.*, 1994: 232). Moreover, as discussed in the first chapter, mitigation and relief efforts are closely linked in so far as the measures adopted in the latter efforts can either ease or exacerbate vulnerability to future disasters.

State-Building, Identity Formation and Disaster Management

In addition to the possible emergence of challenges to existing socio-political and economic arrangements arising from (or at least triggered by) widespread discontent with inadequate disaster-response efforts by the state, such calamities can have other far-reaching, albeit somewhat less direct, security implications. Indeed, disaster management efforts clearly possess significant security implication in so far as such efforts pose both challenges to, and opportunities for, processes of state-building and identity formation. A brief analysis of how disaster management efforts are related to these broader social processes which are themselves inextricably linked to questions of concerning the legitimacy and security of the state is presented below.

In terms of state-building, the occurrence of disasters can pose a challenge to the legitimacy of states in so far as states which do not possess *de facto* control of the entirety of their territories may be unable or unwilling to respond to the needs of disaster victims in territories contested by social groups opposed to the state. Thus, in

so far as such incidents bring into question the internal sovereignty of the state, such calamities clearly constitute a security concern from the point of view of the state.

An excellent example of this type of political dynamic is the earthquake-triggered disaster which caused numerous mudslides and landslides in a remote region of Columbia in June of 1994. The area in question is populated primarily by two indigenous groups and is the site of heroin poppy production which has long been contested between Colombian national security forces and several guerrilla organizations. As a result of these conflicts, the ability of the Colombian state to engage in reconstruction efforts were severely hampered (Olson and Prieto, 1995).

A fascinating and rather unique variation on this theme is the case of the Armenian earthquake of 1988. In this particular case, the government of the USSR invited foreign troops to assist in disaster relief. Although the Soviet Red Army was more than capable of responding itself to the disaster in question, the Soviet regime welcomed the presence of foreign troops in order to demonstrate its new policy of openness ("glasnost").⁴ Another, and perhaps more important, factor underlying this decision was the desire of the regime to minimize the presence of its troops in a politically unstable region in which inhabitants were unlikely to welcome the presence of a military force deemed as repressive. Thus, in light of the internal political challenges to its sovereignty in the region in question, the Soviet regime sought to

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This was a particularly important consideration for the Soviet government given the consternation of the international community two years earlier over its veil of secrecy surrounding the disaster at Chernobyl.

address the plight of disaster victims without provoking further political opposition on the part of the said population (LePointe, 1992).

However, in other contexts, state responses to such calamities have provided a useful springboard and justification for the penetration and extension of state power and influence in territories where it had previously been limited (Pettiford, 1994: 204; Nietschmann, 1994). In such cases, disaster management can thus be utilized by the state to reinforce or further extend processes of state-building. Furthermore, the state may even seek to assert its territorial sovereignty and increase its territorial integration by intervening in regions afflicted by sometimes exaggerated, or even imaginary, disasters. The Australian government's response to the (as it turned out, largely fictitious) threat of famine in the highlands of New Guinea in 1972 is a case in point. In examining the historical context of this supposed disaster, Waddell (1983) argues that the newly appointed government of the time

was concerned to strengthen the very fragile (and artificial) sense of national unity that is characteristic of most ex-colonial territories. ...Insofar as the new government was concerned, it immediately supported the initiative to set up a relief programme, seeing it as a vehicle for affirming its leadership and demonstrating the solidarity of all New Guineans. Soliciting aid throughout the country was seen as a confirmation of the setting aside of tribal and regional loyalties (Waddell, 1983: 34).

The last part of the above quotation leads us to the second central theme which is inextricably linked to questions of state-building: that of *identity formation*. As Agnew and O Tuathail (1992) have noted, security practices are, in a sense, about the process of identity formation in so far as the identification of an external 'other' is used

to contrast “them” from “us”. By seeking to ensure the security of its citizens by protecting them from a threatening external ‘other’ (in this case, a dangerous and destructive act of a malevolent Mother Nature) the state may seek to utilize disaster situations to solidify or maintain national identity and solidarity (e.g. Wisner, 1979). It is in this sense that state responses to disaster events can be legitimately viewed as an exercise in identity formation.

This strategy is facilitated by the fact that the danger posed by natural hazards by and large tends to be described through the use of war metaphors in which hazards such as droughts and floods are signified as the ‘enemy’ (Gilbert, 1995). A particularly striking example of this strategy, although in the context of a post-industrial state of the ‘North’, is the use of discourses of drought among politicians as well as within the media and popular culture in Australia (West and Smith, 1996). Despite the fact that recurrent meteorological droughts are a normal feature of the Australian climate, these hazards are subjected to constant discursive intensification and framed as an “unexpected” and “unprecedented” super-natural, albeit symbolic, threat to the Australian national community. The typical discursive response to such challenges from nature is the reaffirmation of the need for social morality and especially solidarity between rural areas (which are hardest hit by drought) and urban centres.

States may thus respond to such calamities not only to re-assert their sovereignty, but also to reinforce national identity. An example of the intersection of disaster response and identity formation is that of France’s response in 1976 to the

potential disaster posed by an active volcano in Guadeloupe. The French government refused at that time all offers of foreign aid for it was the opinion of those in power in Paris that it was essential for the state to demonstrate that it possessed the means to protect its citizens wherever they might be (LePointe, 1992). In responding unilaterally to this potential disaster, the French government thus sought to assure their sovereignty and reinforce national solidarity. In a somewhat similar vein, the French state utilized the poisonous gas catastrophe at Lake Nyos in Cameroon in 1986 to demonstrate its capacity to respond to such calamities, and thus project its power, in its zone of influence in Africa (Ibid).

Geopolitical Context of Disaster Response

Although the provision of foreign disaster aid is often assumed to be primarily motivated by humanitarian concerns, such responses to the occurrence of 'natural' disasters are inextricably bound to geopolitical considerations (Pettiford, 1995). This is clearly reflected by the differential nature of international responses to disasters of a similar magnitude which varies according to the geopolitical context within which they occur (Blaikie et al., 1994: 206-207). Moreover, there are a number of contextual factors which can determine whether or not foreign aid for a given disaster will be asked for, or accepted by, the state affected and to what degree the international community will respond to a given disaster. The offer as well as the acceptance or refusal of disaster aid is thus uneven and often politically motivated by both the donors and receivers of this aid.

For the donors, the impetus for the provision of disaster relief is derived from both domestic political considerations as well the political, economic and strategic importance (from the donor's point of view) of the state afflicted by a given disaster. A prominent example of the former is the response of the U.S. government to the Sahel famines of the 1970s. Although media coverage of the effects of the drought began as of late 1972, the U.S. government only became involved in disaster assistance in late 1973 largely, though not exclusively, as a result of domestic political pressure applied by black American groups through the Relief for Africans in Need in the Sahel (RAINS) coalition (Albala-Bertrand, 1993: 153).

In other cases, the provision of disaster relief is a reflection of the donor's economic, political and strategic interest in the foreign policy arena. Examples of political and strategic motivations include the use of military personnel in disaster relief operations in order to justify the presence of U.S. troops and bases in foreign countries (Pettiford, 1994). According to Albala-Bertrand, there are also self-interested economic reasons why donor countries provide disaster relief. Among these are the fact that

the assistance with balance of payments deficits will rebound in exports from donors to recipients. Also, an increase in growth and savings in the Third world will bring similar trade benefits to donors. Likewise technical assistance in the form of high-level manpower transfers and the fact that donors normally decide the amounts, forms and purposes of aid will benefit donor countries. In the long-term donors benefit by *securing* imports of raw materials and low-priced imports from recipient countries,

and also by exporting technical personnel and spare parts to recipients (Albala-Bertrand, 1993: 154 [emphasis added]).

In any case, the circumstances determining whether such forces will be deployed in a given disaster situation are often complex and contingent on the politics of the afflicted area.

From the perspective of states which are offered disaster aid, there are a multitude of reasons such aid may be refused. Firstly, there are the potentially negative social and economic impacts of being flooded by disaster aid. The disruption of local markets and economies as a result of massive donations of food aid is but one prominent example of the potential problems associated with disaster relief (Wijkman and Timberlake, 1984). Indeed, some commentators have described disaster relief as a 'secondary disaster' in the making (Pettiford, 1994: 205-207). A state afflicted by disaster may also refuse disaster relief aid since this may act as a catalyst to social change and thus contribute to the destabilization of the state or regime in power. This is particularly true in cases where the region(s) most affected are either controlled or influenced by factions or social groups which oppose the state or current regime (Seitz and Davis, 1984).

Finally, regimes may attempt in some instances to conceal from the international community the occurrence of 'natural' disasters, which remain unaddressed by the state, within their borders in order to either maintain the image and credibility of the state and because small incidents cannot be exploited to gain foreign aid relief (LePointe, 1992). Seitz and Davis echo this observation, arguing that such

political strategies are particularly prevalent in ethnically pluralist countries “where the central government is either genuinely unaware of the event or is indifferent to the group affected or feels that inaction is a protective stratagem” (1984: 235). Albala-Bertrand makes a somewhat similar argument, citing such disasters as the 1970 storm surge and floods which struck Eastern Pakistan (i.e. Bangladesh), the Sahel drought-famine of 1968-1973, the Ethiopia drought-famine of 1973, the Haiti famine of 1976 and the Philippine earthquake of 1976 as paradigmatic examples of non-disclosure or acknowledgement by the state of disasters which occur within its territory (1993: 160). Moreover, he highlights other crucial reasons for which governments do not acknowledge disasters, among which are

...to prevent international media and relief agencies from revealing worldwide the details of appalling inequalities, criminal negligence, and the misery of the majority of people in such countries; secondly, to hide the corruption and misuse of normal foreign aid; thirdly, to protect export sales to countries fearful of importing disease along with commodities like bananas and coffee; fourthly, to prevent losses to tourism because of epidemics, shortages, and the public image (i.e. the other side of idyllic publicity); and, fifthly, a variety of domestic and foreign and political costs (Albala-Bertrand, 1993: 152).

To the degree that the political understandings of ‘security’ are equated with the maintenance of the political and economic *status quo* and that disaster response measures may in some cases act as a catalyst for political and social change, efforts by the state to conceal the occurrence of such disasters thus clearly constitute a security stratagem for the protection of state sovereignty.

However, it should be noted that the increasing legitimacy of the principle of “humanitarian intervention” may limit in the future the use of disasters as a weapon by the state. Indeed, the adoption of resolution 43/131 by the Assembly of the United Nations has, at least tentatively, legitimized the principle of free access of victims of catastrophes (including ‘natural’ disasters) to international humanitarian assistance, even at the expense of violating state sovereignty (Whitman, 1994). As proposed by France within the context of the UN, the principle of humanitarian intervention was initially viewed as somewhat utopian and even dangerous, but has since gained some credibility as the interventions in northern Iraq (resolution 688) and Somalia (resolution 794) have shown (LePointe, 1992). Nevertheless, the newly emerging political principle raises troubling questions for the political institution of sovereignty which constitutes one of the cornerstones of interstate relations. Indeed, this resolution has raised concerns that such interventions may serve as a pretext for the major powers, who alone have the resources and capabilities to execute such interventions, to violate the sovereignty of weaker states (Ibid: 1090-1091).

Security, Development and Hazard Vulnerability: A Case Study

In order to further elucidate the role of the security practices of states in the social production of hazard vulnerability, this third section of the present chapter focuses upon the social processes underlying one particularly devastating calamity: the Sudanese famine of 1984-1985 which was triggered by four consecutive years of widespread drought. In light of the highly contextual nature of hazard vulnerability

(Blaikie *et al.*, 1994), the purpose of this case study is to flesh-out the arguments presented in the preceding two sections by illustrating how the security practices of states have contributed to the social production of hazard vulnerability in a specific geographical and historical context. While a detailed analysis of the famine in question is well beyond the scope of this thesis, the brief and admittedly schematic analysis which follows does nevertheless serve to highlight the impact of the security practices of states upon hazard vulnerability.

The impact of the Sudanese famine of 1984-1985, which claimed the lives of perhaps 100 000 thousand people (Blaikie *et al.*, 1994: 200), was far from uniform and varied by region (i.e. geographical space), as well as by income, ethnicity, gender and age (i.e. social space). The principal geographical spaces of vulnerability of this famine were the rural areas of Darfur and Kordofan in the West, and the regions of Kassala and the Red Sea in the East (Elmekki, 1993: 2). However, not everyone living within these areas was equally affected. As Blaikie *et al.* (1994: 200) point out, the groups most affected by the impact of the drought were “displaced people who migrated to camps and then returned home, pastoralists with small herds, and sedentary agriculturalists lacking substantial food stores” .

Among the most crucial factors underlying the transformation of the drought into a large-scale famine was the inability of the Nimieri regime to adequately respond to the food crisis and by failing to declare a national famine “as this would have undermined its internal and external credibility” (Shepherd, 1988: 50-51). Although the immediate crisis was eventually overcome through the massive relief efforts of the

international community as well as the arrival of rains in 1985 and 1986 (Duffield, 1990b; Shepherd, 1988), the various social processes which contributed to the exacerbation of hazard vulnerability (both before and during the famine) remained, as the discussion below will illustrate, largely unaddressed.

The disaster in question was chosen for the purposes of the present case study on the basis of a number of considerations. Firstly, famines triggered by droughts and other natural hazards are the most lethal and disruptive form of 'natural' disasters (Ibid: 75-100) and, as a result, are central to the more general debates about hazards and development (Hewitt, 1995a: 116). Secondly, such food security crises are clearly a significant contributing factor in crises of political instability (Blaikie *et al.*, 1994: 75), with the Sudanese famine of 1983-1985 and the fall of the Nimieri regime arguably constituting a paradigmatic example of this argument. Moreover, the famine in question also constitutes a clear example of the 'environmental security' thesis advocated by writers such as Mathews (1994) in so far as processes of land degradation clearly exacerbated the impact of drought and thus contributed heavily to the food security crisis of 1984-1985 (Mohammed Salih, 1990) and, by extension, the fall of the Nimieri regime in April of 1985 (Myers, 1993: 64).

Finally, given the preliminary nature of the present study, the famine in question was chosen as a case study in light of the readily apparent linkages between the security practices of states and hazard vulnerability. Drawing inspiration from the investigative strategy of Homer-Dixon (1996a: 54-55) and his colleagues, the selection of a case study on this basis is entirely justifiable in the early stages of scholarly

research due to the need to cultivate a greater understanding of the nature and scope of the linkages between the security practices of states and the social production of hazard vulnerability.

The analysis is divided into two subsections, the first of which briefly examines the discursive construction of the Sudanese famine within a consultants report to the USAID (1986) and a brief report produced by the North South National Roundtable on Sudan (1986). Both of these documents serve to provide a glimpse of the perception of, and response to, the famine on the part of the Sudanese state and the international community. These interpretations of the causes of the Sudanese famine of 1984-1985 are then contrasted in the second section by an examination of some of the more radical academic interpretations of the famine's etiology, all of which emphasize the impact of agricultural modernization and, to varying degrees, political coercion in the social production of vulnerability (e.g. Elmekki, 1993; Duffield, 1990a; 1990b; Mohammed Salih, 1990).

The aim of contrasting these different interpretations of the roots or causes of the Sudanese famine is to not only underscore the contribution of the security practices of the Sudanese state in the social production of famine vulnerability, but also to highlight the degree to which these practices are largely marginalized or completely ignored in the explanations of disaster causation which undergirded "official" responses to this disaster. While a far more detailed analysis of governmental and intergovernmental responses to this (and other) calamities *from a security perspective* is certainly required in the future, the brief analysis nevertheless clearly illustrates the

importance of the security practices of the Sudanese state in the social production of vulnerability both before and during the disaster in question.

The 1984-1985 Sudanese Famine: Governmental and International Responses

As Blaikie *et al.* (1994: 75) have pointed out, there exists a startling disjuncture between the academic literature on the explanation of famine and the more policy oriented studies of such calamities produced by relief agencies, government consultants and governments themselves. This observation is strongly echoed by Duffield (1990a; 1990b) in his review of the differing approaches to the analysis of, and response to, the problem of famine in Sudan. Noting the tendency amongst donor and government officials (which is reflected in the literature on food security in Sudan) to view the famine in question as the result of “a normally self-provisioning peasantry which is pushed into distress only as a consequence of exceptional external conditions” (Duffield, 1990a: 187) such as drought or war, Duffield argues that the underlying cause of the Sudanese famine of 1984-1985 is the ongoing crisis and collapse of the subsistence economy which has left peasants and pastoralists vulnerable to the impact of drought. The analysis presented in this first sub-section examines in greater detail the former perspective on the origins and causes of the Sudanese famine.

When the Nimieri regime proved to be unable and unwilling to respond to the need of those threatened by starvation in 1984 and 1985, a massive disaster relief effort was mounted by various members of the international community. Among the various donors of disaster aid, the United States Agency for International Development

(USAID) was by far the largest. Taking responsibility for the food emergency in the Kordofan and Darfur regions in the West, where a large portion of the at-risk population (estimated to be 6-9 million in all of Sudan) was located, the USAID delivered large shipments of sorghum for general feeding from mid-1984 to mid-1985 as well as food for supplemental feeding programs during the same period.

After the immediate crisis had subsided, the USAID commissioned a consultants report in order to evaluate the agency's response to the "African food emergency" and make recommendations for improving food emergency responses (AID, 1986: viii). Drawing upon extensive interviews and secondary sources, the report briefly examines the underlying causes of the famine in Sudan and sub-Saharan Africa as a whole. The import of these observations and arguments regarding the origins and root causes of famine is considerable in so far as they directly influence the orientation of recommendations made within the report regarding future food emergency operations.

Asserting that the problems of declining per capita food production, persistent drought and emergency food crises in Sub-Saharan Africa are inextricably linked (Ibid: viii), the authors of the report argue that one of the key lessons of this large-scale famine is that such calamities are linked to problems of underdevelopment and "should be seen as a syndrome of inadequate income growth and not just as drought-induced manifestations of hunger, malnutrition, and ill health among vulnerable population groups, which is the common perception" (Ibid: ix). Noting that development programs in the past "were not aimed at increasing the economic well-being of groups most vulnerable to drought", the authors argue that with the onset of four successive

years of drought (1981-1982 to 1984-1985), “the income of these groups collapsed, leading to famine and necessitating emergency food assistance for them” (Ibid: xiv).

Furthermore, the authors assert that the impact of the drought was intensified and transformed into a food emergency by the inability government of Sudan to respond to the needs of those affected by famine. A number of factors are identified by the authors to explain this failure of the Sudanese state to avert famine. Most prominent among these are weak communications and transport networks (a major barrier to development and emergency responses), foreign debts, and political instability (i.e. civil disorder and the fall of the Nimieri regime) which significantly “hindered the government’s ability to respond to development and emergency needs” (Ibid: B-2). One final factor identified by the authors is the almost complete absence of famine early warning systems, food emergency preplanning units, or other famine relief mechanisms. This absence may in part be explained by the fact that Sudan had not experienced continuous drought in over 20 years (Ibid: B-2).

In light of these observations, the authors identify two key links between development and food emergencies. The first of these concerns “whether development programs are designed to preclude such emergencies” while the second pertains to “whether emergency food assistance is designed to be developmental” (Ibid: xiii). The authors conclude by arguing that emergency food assistance should be linked to development efforts (which should seek first and foremost to avert such catastrophes) by aiming to increase beneficiary income (through, for example, food-for-work programs) among vulnerable groups in order to increase assets.

A somewhat similar but more in-depth interpretation of the origins and causes of the Sudanese famine of 1984-1985 can be found in the report concerning the meetings of the North South Roundtable on Sudan which took place from the 15-17 of March, 1986 (North South Roundtable on Sudan, 1986). The document in question provides an overview of the observations and arguments aired at the meetings, a crucial part of which consisted of a full briefing on a number of recent national conferences on a number of topics (e.g. macro policies, aid, agricultural production, infrastructure) which had led directly to the recent adoption of an emergency plan by the Sudanese government. These presentations by Sudanese participants were then followed by responses of the international community and further discussion. In seeking to chart a path to "authentic" patterns of development, the discussions within these meetings focused on a number of issues related to food security and hazard vulnerability including constraints on agricultural production, the problems of shifting from famine relief to the tasks of rehabilitation and long-term development, the uses of food aid, and the need for domestic reforms. It is in the course of these discussions that the underlying causes of famine of 1984-1985, and food insecurity more generally, are examined.

The presentation of the national agricultural sector conference is of particular importance to the question of food security which interests us here. Among the basic recommendations formulated within the context of this conference is that the principal aim of government agricultural policy should be the provision of food security to assure that there would be no more famines. To this end a number of policies were

recommended to increase incentives for production, improve marketing and to restore the ecological balance to combat desertification. As the discussion below illustrates, particular emphasis was placed upon this last theme in presentations and discussions regarding the agricultural sector and food security.

It was pointed out in the presentation of the national agricultural sector that the combination of drought and inappropriate farming practices had been harmful to the environment in terms of the reduction of arable land and forestry resources, as well as a reduction in the quality of pastoral areas. This emphasis on the impact of environmental degradation and desertification was reinforced by the presentation of the National Committee on the Environment. According to the latter, the major causes of desertification in Sudan are “the mechanization of agriculture, traditional shifting cultivation whose cumulative effects were not unlike the large farms, range degradation by over-grazing due to the explosion of the number of animals, over-cutting of trees for fuel wood as a consequence of demands of a high population growth, and sand dunes encroachment on arable lands where losses have been significant (e.g. one third of the arable land has been lost in three large areas in the Northern region along the Nile over the last 20 years” (Ibid: 10).

While one participant maintained during discussions that mismanagement of water resources and desertification were the real causes of poverty in Sudan, others argued that the drought had led to a loss of productivity which, when combined with population growth, had lowered incomes and increased social instability. Although the deployment of such neo-malthusian or sociobiological discourses (Hewitt, 1995a)

within interpretations of the causes famine can be found throughout the report, it was also noted in the agricultural sector presentation that “the pattern of large-scale projects had discriminated against the traditional agricultural areas in the West and the South, leading to an unbalanced pattern of development” (Ibid: 7). This last observation is clearly reflected in the lop-sided character of past agricultural investments which were focused on the Nile basins to the neglect of other areas, particularly dry land agricultural areas (Ibid). This last observation echoes one of the major themes which emerged during the meetings: “(t)he enduring political and social differentiation in the country between the Arabs and blacks and between the modern and traditional sectors”, a schism which “past development patterns had often exacerbated by concentrating development in the more modern and Arab sectors of the economy.” (Ibid: 17).

The interpretation of the root causes of the famine by the representatives of the international community was, according to the rapporteurs’ report, somewhat more varied with the representatives in question arguing that the basic problem underlying famines is not one of climate, but of poverty arising from a number of causes. Among the latter are “resource problems related to a fragile environment, a colonial heritage, high population growth, imbalances in planning, particularly neglect of food production by the peasant farmer. All of this had made the rural poor highly vulnerable to famine” (Ibid: 15).

The various arguments presented above clearly suggest the presence of underlying contradictions and tensions in the various interpretations of the Sudanese crisis, an argument which is clearly echoed in the rapporteurs’ observation that

(p)articipants agreed that the old regime had been responsible for a good deal of mismanagement and had lost many opportunities to gain ground. Some felt that former Head of State Nimiery could be blamed for most of the trouble, but others pointed out a number of “contradictions in the society” which could be seen as more enduring problems (North South Roundtable on Sudan 1986: 23).

In order to gain a greater understanding of the causes of the underlying causes of this famine, the following section examines in greater depth some of the more critical academic interpretations of the causes of the 1984-1985 famine which, unlike the explanations described above, do not rest upon neo-malthusian notions and discourses of environmental determinism.

Development, Security and Famine in Sudan

In order to gain a full understanding of the social processes which exacerbated hazard vulnerability among marginalized groups and led to the food security crisis of 1984-1985 in northern Sudan, it is necessary to examine the historical development of the country's agricultural sector from the colonial period to the present. Sudan's agricultural sector is divided into three subsectors: the irrigated subsector (which specializes in the production of cotton), the rainfed mechanized subsector (which produces primarily sorghum) and the peasant subsector (which traditionally focused on subsistence production). The basic unit of agricultural production in Sudan is the household with the resources of its members being distributed (from the colonial period onward) among these three “circuits” of production. As the discussion below illustrates, the gradual disintegration of the peasant subsector at the expense of the

other two subsectors since the colonial period has undermined the ability of certain portions of the Sudanese Peasantry to feed themselves.

During the colonial period, the economic role of African colonies in the world economy was to supply raw materials and agricultural goods to industrialized European countries. In the case of Sudan, it was specialized in the production of cotton in order to satisfy the needs of industries in Manchester. A key aspect of colonial policy during this period was the promotion of the commoditization of peasant production. The goal was to incorporate peasant producers into the national accumulation circuit. (Elmekki, 1994: 10). This incorporation was accomplished through the use of force, taxation and the expropriation of land. Through the organization of crop marketing, peasants were encouraged to produce cash crops such as groundnuts and sesame for which there was a huge demand on the world market. The peasantry was obliged to supplement their subsistence food crops with the production of cash crops in order to pay taxes which were imposed upon them as well as to purchase newly introduced consumer items such as sugar, coffee and aluminum utensils. Finally, entire populations were displaced from fertile lands in order to accommodate European settlers and their large-scale plantations. As Salih (1990) points out, these early processes of transformation in the saga of agricultural modernization in Sudan did not occur without resistance: armed force was utilized by the colonial powers to pacify those groups who objected to policies in question.

Although production of food crops still dominated during this period, already the food security of the peasantry was being undermined since the practice of storing

surplus, which permitted peasants to survive during periods of drought, was abandoned. Indeed, citing the shortages of 1913-15, 1932-34, 1938-39 and 1948-49 as examples, Elmekki (1993: 7) argues that “periodic food shortages in the country started as a striking phenomenon during the first decade of colonial rule with the acceleration of the processes of rural transformation”. However, it is crucial to point out that because colonial officials during this period viewed food security as being essential to the political stability and “security” of the colony, famine relief measures similar to those adopted in India were implemented in Sudan (Shepherd, 1988: 38-49). These famine regulations were, moreover, of utmost political importance in so far as “the administration justified its own existence partly on the grounds that it would not tolerate the famine conditions prevalent before the reconquest” (Ibid: 38).

With the proclamation of Sudanese independence in 1956, the process of commoditization of the peasant sector which had begun during the colonial period was *accelerated*, despite its clearly negative impacts on food security. According to Elmekki (1993: 13), the policy during the post-colonial period was “nothing more than a consolidation of the colonial one and it was based on the same principles of forcing peasants to produce exportable crops”. As a result of these policies, the peasant subsector had effectively been overtaken in importance by the commodity and wage labour circuits by the end of the 1960s (Ibid: 28).

Nevertheless, despite the continuing of the process of agricultural commodification, the food security situation in Sudan was relatively stable from the 1950 to 1970. Moreover, due to a number of factors, Sudan was able to emerge

relatively unscathed from the famine of 1968-73 which ravaged other Sahelian countries. At least two factors seem to have been of particular importance: the growth of the labour market and the alternative pattern of agricultural development adopted in Sudan during the 1960s.

As capitalism expanded in Sudan during this period, temporary employment opportunities in harvesting cotton and *dura* increased. This livelihood strategy was largely adopted by many peasants in concert with the production of subsistence crops or livestock raising. Migration to find employment thus became “an accepted strategy for deficit householders to eke out their incomes” (Shepherd, 1988: 46). Indeed, the importance of migrant labour is such that “the economy of the core riverain areas depends to this day on migrant labour” (Ibid).

The other major factor which explains Sudan’s ability to withstand the effects of the 1968-1973 drought is its alternative pattern of agricultural development. Because of the decline of the profitability in the production of cotton in the late 1950s, the Sudanese agrarian bourgeoisie sought more profitable ventures. Thus, rather than seeking to expand export production like many other developing countries, emphasis was placed on capitalist food production for internal markets. This led the élite to place a heavy emphasis during the 1960s on partially mechanized sorghum production, particularly in the rainlands. While the primary goal of sorghum production on mechanized farms was to assure an adequate supply of relatively cheap sorghum for the domestic market, the mechanized sector was also originally intended to contribute to

improving balance of payments (by producing surpluses of sorghum and sesame) and broadening the rural labour market (Elmekki, 1994: 14).

Investment in the partially mechanized rainfed agriculture during the 1960s was supported by the state often (quite ironically) to the fiscal detriment of the generally government-operated export (cotton) sector. The bourgeoisie used its influence in government circles to divert such things as machinery, spare parts and fuel to the capitalist agricultural sector. Unfortunately, this practice diverted desperately needed resources in the export sector and eventually resulted in the *decrease* of export revenues between 1970 and 1976. The “neglect of the irrigation infrastructure in...cotton schemes led to massive deterioration and to decline in yields” (O’Brien, 1985: 25).

As previously noted, the goods produced on private capitalist farms were aimed at the Sudanese market and were not intended for export. This created a grave contradiction however, since the costly imports which mechanized agricultural production necessitated could not be covered by the state’s declining export revenues. In other words, the “pursuit of capitalist growth led by the expansion of food production for the internal market without solving the problem of export dependency to finance the imports thus paved the way for a crisis of massive proportions” (Ibid: 26).

In response to this crisis, the Nimieri regime embarked in the early 1970s upon an ambitious and expensive program of development aimed at diversifying and expanding the country’s export base in the hope of turning Sudan into the “bread basket” of the Middle East (Cheru, 1992: 505). All resources were directed towards

the development of infrastructure for this strategy. Despite the protests of the World Bank (which insisted that Sudan should, because of its comparative advantage, concentrate on the production of cotton) the Sudanese government proceeded with its diversification strategy in order to reduce the country's vulnerability to market fluctuations.

This diversification effort was supported financially by OPEC countries which were seeking to minimize their dependency on food imports from the West with whom relations were tense because of the 1973-74 oil embargo. Through this strategy, the regime sought "a quadrupling of the area under cultivation within the irrigated and mechanized farming, and a boost in the output of grains, seeds, vegetables, fruits, sugar and meat for export" (Ibid.). The mechanized subsector, which during the 1960s had focused on the production of crops for the internal market, was reoriented towards the production of sorghum for export. By reorienting its focus towards the export market, the mechanized subsector gained considerably in terms of profitability. Consequently, the mechanized subsector expanded considerably in terms of land under cultivation.

This process had numerous consequences for food security among the Sudanese peasantry. Firstly, the government supported expansion of rainfed agriculture during this period further began inhibited the ability of the rural masses to meet their needs (O'Brien, 1985: 27). Private capitalist agricultural production expanded during the 1960s and 1970s to include at least five million additional acres, much of which had previously been prime seasonal pasture of nomadic herds. (Ibid) Consequently,

peasants and pastoralists were sometimes forced to move from the most fertile lands in order to make room large-scale commercial farms.

These displaced pastoralists moved either to lands already occupied by cultivators or onto ecologically fragile zones. In the face of increased food insecurity, many peasants to adopt various coping strategies or “adjustment mechanisms” which only aggravated environmental degradation and further undermined their long-term food security. Among the mechanisms used by peasants and pastoralists to acquire food during acute shortages are the sale of animals, overcultivation (abandonment of fallow periods), cultivation of marginal lands and the sale of fuel wood. The vulnerability of the peasantry to food insecurity was also exacerbated during this period by the increased cost of sorghum produced by the mechanized sector due to the reorientation of the latter towards the export market. Since this sorghum was often too highly priced for the peasantry to acquire, this led to a decline in the peasantry’s ability to acquire food at through market mechanisms. In summary, the expansion of the mechanized subsector thus resulted in a decline of the peasantry’s ability to acquire food at both the production level (by inhibiting subsistence production) and exchange levels (by making sorghum too costly for peasants to buy on the market).

By the late 1970s, Sudan’s “bread basket” strategy was in a shambles as a result of the oil shock and the world recession which deeply affected its terms of trade. This rendered the regime unable to cover the recurrent costs of the capital intensive projects associated with its diversification strategy. Consequently, it was forced to turn in 1978 to the IMF and other international donors for help. The changes brought about

in the agricultural sector at this time only continued to exacerbate food insecurity among the peasantry.

In an attempt to rectify Sudan's grave financial difficulties, the IMF and the World Bank forced the Nimieri regime to initiate a series of "stabilization" programs which sought "to correct external imbalances caused by the deterioration in the terms of trade and low export performance and to cut the growing budget deficit" (Cheru, 1992: 506). The Economic Recovery Program (ERP), jointly developed by the World Bank and the IMF, featured numerous "conditionalities" including: currency devaluation, liberalization of trade, reduction of the government's budget deficit through social spending cuts, massive layoffs, and *the removal of subsidies on food and other consumption items*.⁵

This last conditionality had particularly severe repercussions for the food security of peasants and particularly poor urban workers. Government subsidies which had previously permitted the working poor in urban areas to acquire food at reasonable prices were eliminated with the adjustment programs. The removal of these subsidies (on bread, petrol and wheat flour) directly contributed to an uprising initiated by the urban poor, and soon thereafter supported by political and educated élites, which eventually led to the overthrow of the Nimieri regime in April of 1985 (Salih, 1990: 129).

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For a more detailed examination of the impact of structural adjustment programs in Sudan, see Prendergast (1989) and Cheru (1992).

In so far as the agricultural sector is concerned, the conditions of the loans strongly influenced, if not determined, the (unsustainable) policies adopted by the Nimieri regime (Cheru, 1992). Because the primary goal of these adjustment programs was to increase Sudan's export earnings in order to permit the repayment of debts, government spending and support was almost exclusively funnelled towards export sectors. Consequently, efforts were once again focused on the production of cotton with the introduction of its Agriculture Rehabilitation Program (ARP). Although cotton production did improve significantly under this program, it was achieved at the cost of expanding land under cultivation and, ultimately, enhanced food insecurity among marginalized peasant and pastoral groups. Lacking proper political representation, the peasantry (who make up the bulk of the population) was unable to influence the formulation of development and agricultural policies in its favour which favoured the interests and preoccupations of the state and a small minority of capitalist farmers.

To summarize the argument thus far, government agricultural policies, during both the colonial and post-colonial periods, have gradually rendered peasants and pastoralists more and more vulnerable to food insecurity. By favouring the development of the irrigated and mechanized subsectors, the policies of successive Sudanese governments have led to the disintegration of subsistence farming circuit. With the implementation of stabilization programs in the late 1970s, the ability of peasants and pastoralists to acquire food supplies at the production and exchange circuits was further eroded. It is in this context of profound economic crisis, social and

ecological marginalization that the massive and widespread drought of the early 1980s triggered an immense food security crisis in northern Sudan between 1983 and 1985.

However, although the role of processes of socio-economic, political and ecological marginalization in exacerbating vulnerability to drought and food insecurity in Sudan is well documented, the crucial role of the parallel practices of political coercion is rarely examined (Salih, 1990). This latter point is crucial given that the transformations in patterns of agricultural production which occurred before and after independence did not take place without resistance. Indeed, as Mohammed Salih points out “(s)ince the 1940s, force was used in the Sudan to evict traditional cultivators and pastoralists from their farms, animal routes, grazing lands and water points in favour of the expansion of large-scale mechanized farms” (1990: 124). Echoing this argument, Duffield (1990a: 192) notes that the marginalization of small peasants and pastoralists is inextricably related to what he describes as the “decay of governance” and the erosion of civil rights, of which the virtual seizure of nomadic rangelands (for the expansion of mechanized agriculture) is but one example.

The expansion of the mechanized schemes led to the creation of three types of conflict: between traditional producers and the owners of the schemes, conflicts among local populations living at the margins of the schemes, and conflict between small farmers and pastoralists and the state in which the latter inhibited their spontaneous resettlement to more fertile lands and better pastures. Moreover, the expansion of the mechanized schemes led to the emergence of regional political movements including the Sudanese People’s Liberation Movement (SPLM) and the associated Sudanese People’s

Liberation Army (SPLA) which contested the manner in which farm land was distributed in Sudan (Salih, 1990: 126-127).

Once the famine had begun, the use of political coercion in the name of national development and security did not cease. As Mohammed Salih has pointed out

when millions of the victims of the 1983-1985 drought and famine began to search for survival alternatives, they were constantly obstructed by state authorities who opposed their movement into the wetter zone and into areas which had been demarcated for the future expansion of mechanized farms. Such areas were carefully monitored by regional authorities to prevent spontaneous resettlement. The army was deployed in some areas to protect mechanized farms and to control the movement of small cultivators and pastoralists who thus found it difficult to continue their pastoral and farming activities (Salih, 1990: 124).

Meanwhile, famine victims who migrated to urban areas in the hope of finding alternate means of sustenance were also frustrated in their efforts by the Nimieri regime's concern over the possibility of urban unrest as a result of this massive influx of refugees. An estimated four million people affected by famine migrated into various urban centres including (but not limited to) Khartoum, Omdurman and Khartoum North (Salih, 1990). The urban population was divided between extreme sympathy for the refugees and fears about the pressures which this massive influx of people would place on health, transport and education services. In any case the arrival of the refugees triggered a noticeable shortage of food as prices began to soar. Fearing the alienation of the urban population, the government resorted to coercive measures. As Salih notes

(t)he government...demolished the houses of refugees which were built on the outskirts of towns and used the police and army to return them to their home areas. One justification given by the government for this action was that *the refugees represented a*

various prominent political figures from the Nuba Mountains region were detained (Salih, 1990: 128 [emphasis is mine]).

The sum of the above observations concerning the Sudanese famine of 1984-1985 clearly mirror many of the arguments presented in the previous two sections. Although critical analyses generally emphasize the importance of historical processes of economic development in interpreting the origins of the Sudanese famine, the implication of the discursive and material practices of security in the implementation of development policies and projects are only indirectly acknowledged in most of these studies (with Salih (1990) being a crucial exception). While the impact of some of the more prominent material dimensions of the security practices of states (particularly the use of “food as a weapon” in contexts of civil war) is widely acknowledged in explanations of famine (e.g. Duffield, 1990a), the analysis presented above underscores the importance of directly addressing the “politics of security” (Dalby, 1997) in so far as the civil and human rights of marginalized groups are sacrificed to the imperatives of national development and “security” (Johnson, 1995), all of which can enhance the precariousness of livelihoods and hazard vulnerability.

From Environmental Security to Environmental Rights

As the preceding analysis strongly suggests, contemporary political formulations of security clearly function in some contexts as an ideological “root cause” in the social production of hazard vulnerability. While these linkages are often indirect and somewhat tenuous, the bulk of the observations presented above nevertheless suggests

that these linkages are both real and significant. From this perspective, recent proposals regarding the potential benefits of framing matters of hazard vulnerability as “security issues” (e.g. Pettiford, 1995) seem somewhat dubious. This is particularly true in light of the continuing persistence of the militarized and state-centric formulations of security which became so well-entrenched in the Cold War era (Dalby, 1996b).

A more promising and potentially more productive approach to bringing questions of hazard vulnerability into the global political arena may be to integrate such matters into a framework of *environmental rights*. The concept of environmental rights has emerged and prospered in recent years as a result of the growing recognition of the crucial relationships between ecological sustainability, environmental protection and traditional human rights. Given that a large number of substantive human rights (e.g. the right to health, occupational safety, safe housing, an adequate and wholesome diet) are dependent upon a healthy environment, the concept of environmental rights has emerged as a central component of the larger concept of human rights (Sachs, 1995). Within this newly emerging framework of environmental rights, vulnerability to the impact of natural hazards is clearly crucial in so far as hazard vulnerability undermines the right to such necessities as health, adequate diet and safe housing (Wisner, 1995).

In general terms, the import of various discourses of human rights in the context of security debates is that they serve to highlight the tensions and contradictions between the imperatives of state security and the safety and well-being of the citizens of the state (Weaver, 1995). More specifically, these discourses bring into question the

inviolability of discourses of development and national security and in so doing implicitly engage the politics of security by politicizing the fundamental question of what is being protected by whom from what (Dalby, 1997). Indeed, the suppression of oppositional movements (e.g. regional, indigenous, environmental) to the development policies and projects of the state which are often promoted in the name of national security strongly suggests the central importance of discourses of human rights and environmental rights (Sachs, 1995) in challenging the discursive hegemony of developmental and security discourses. Moreover, an emphasis on human and environmental rights may contribute to highlighting what Hewitt describes as the “moral and practical dilemmas...(which) arise where the capabilities and preoccupations of national security are at odds with, or divert attention and resources from the needs of those at risk and suffering from disasters” (1997).

Conclusion

As the preceding analysis suggests, the political understandings and practices of security which underpin states and their regimes is a crucial but often unrecognized ideological “root cause” underlying hazard vulnerability. To the degree that the promotion of economic development and the provision of a stable socio-political and economic order (i.e. “security”) in which development activities can be carried out constitute the primary functions of the state, integrating matters of hazard vulnerability within state-centric security frameworks may only prove to be counter-productive.

Chapter 5

Natural Hazard Management: Mitigating Disaster or Securing Vulnerability?

If the survival of the nation state is assumed to be the goal in and of itself, the analyses of vulnerability changes significantly (Wisner, 1993: 134).

Having examined in the previous chapter the impact of the discursive and (albeit to a lesser degree) non-discursive dimensions of the security practices of states upon hazard vulnerability and disaster response, this fifth chapter reverses the analytical focus by examining the security implications of conventional disaster mitigation practices.¹ More specifically, the analysis presented below illustrates how conventional hazard management practices are in many ways complementary, and work in tandem with, the security practices of the modern state (Hewitt, 1995a: 121). Moreover, it suggests that the dominant paradigm in hazard management circles is based upon assumptions similar to those which underpin traditional understandings of national security.

The purpose of highlighting these linkages and parallels is to suggest that integration of disaster mitigation concerns within political formulations of security may

1

The following analysis is concerned solely with disaster *mitigation* rather than disaster *response*. While these two activities are closely linked in practice, the former is emphasized here at the expense of the latter given the recent emphasis on mitigation within the context of the IDNDR and the relationship between disaster mitigation and questions environmental change and ecological sustainability. A closer examination of the security implications of relief and rehabilitation operations in the wake of 'natural' disasters (beyond what was presented in the previous chapter) remains a task for the future.

only serve to further legitimate conventional approaches to hazard management which fail to address the underlying “root causes” of differential hazard vulnerability.

The analysis developed in the present chapter focuses upon two interrelated critiques of the hegemonic paradigm within the field of hazard management which are of direct relevance to the debates over the redefinition of security. The first of these concerns the manner in which the “dominant view” problematizes the question of disaster. More specifically, this critique concerns the lacunas and lapses inherent within the dominant paradigm’s formulation of three key concepts: disaster, vulnerability and sustainable development.

Much in the same way as the contemporary debates in the field of security studies have raised the fundamental question of who and what is rendered ‘secure’ by way of the security practices of states (Krause and Williams, 1996), recent critiques of the dominant discourses of hazards and disaster have posed the critical question of who and what is rendered ‘secure’² by conventional disaster mitigation practices. Indeed, in a recent provocative analysis, Hewitt (1995a: 125-126) has suggested that not only is the dominant technocratic approach to disaster mitigation ineffective in reducing the vulnerability of marginalized groups, it is almost certain to help *prevent* the reduction of, and perhaps even reinforce, such vulnerabilities.

2

Within the hazards and disaster literatures, the term ‘security’ is often (e.g. Hewitt, 1995a; 1995b; Blaikie *et al.*, 1994) utilized to signify the converse of ‘vulnerability’.

Overarching the critique sketched out above, the second facet of this appraisal of hegemonic discourses of hazards and disaster draws upon Hewitt's use of the concept of *governmentality* in his analysis of the relationship between power, knowledge and interests in conventional problematizations of 'disaster' (1995b). In his analysis, Hewitt argues that disaster studies have by and large been shaped by two major factors or constraints: the social construction of disaster events in terms of the perspectives, practices and powers of centralized organization (i.e. the administrative apparatuses of the state charged with hazard management and disaster response) and the preoccupation of such organizations with maintaining control in times of disaster (Ibid: 331-333).

The import of this critique in the context of the present thesis is that it highlights how the problem of disaster is articulated and socially constructed around institutions and viewpoints of power. By illustrating how particular social constructions of disaster are inextricably linked to the perspective and interests of those who deploy them (i.e. the administrative apparatuses of the modern state), the analysis in the pages below seeks to illustrate the similarities and interconnections between the problematics of hazard management and national security. It is in *this* sense that the linkages and parallels between state-centric definitions, understandings and responses to hazard vulnerability and threats to 'security' will be drawn out.

In order to examine the security implications of the hegemonic discourse of hazards and disaster, I have chosen to undertake a discursive analysis of two hazard management manuals, the contents of which typify this dominant view. The analysis is

divided into three sections, the first of which briefly describes the three discursive functions (i.e. relational, identity and ideational) of the texts in question and provides an initial critique of these functions (see Chapter 3). The second section examines some of the resistant readings which the contents of these texts (and others like them) have received from some quarters by examining in greater detail the lacunas, lapses and silences inherent within their problematization of disaster, vulnerability and sustainable development. Drawing upon the concept of governmentality as well as the critique developed in the previous section, the third and final section illustrates how “natural disasters” and threats to “national security” have been problematized in a parallel and complementary fashion by the modern state.

The Dominant View: Discursive Practices

This first section serves to provide readers with a profile of the conceptual infrastructure which underpins conventional approaches to hazard mitigation. In order to do so, it describes the discursive construction of the hazard mitigation problematic contained in two recent manuals on disaster mitigation. The brief preamble below introduces the texts in question and justifies their selection for purposes of this discursive analysis.

The first of the two manuals which comprises the focus of the present analysis is titled Mitigating Natural Disasters: Phenomena, Effects and Options - A Manual for Policy Makers and Planners and was prepared by the **United Nations Disaster Relief**

Organization (UNDRO, 1991). The document in question represents a “distillation of a vast body of knowledge and experience” (Ibid: ii) and, as the rather authoritative title suggests, provides a comprehensive and systematic overview of the technical aspects of disaster risk assessment including the nature and effects of rapid-onset natural hazards and the options which are available to mitigate their impact.

The second manual which concerns us here is entitled Disasters. Planning and Development: Managing Natural Hazards To Reduce Loss and was produced by the Department of Regional Development and Environment of the **Organization of American States** with the assistance of the support of the **Office of Foreign Disaster Assistance/United States Agency for International Development** (OAS, 1990).

Albeit its exposition of hazard and vulnerability assessment methods *per se* is not as extensive as that of the UNDRO manual,³ this synthesis of the experience of the OAS during the 1980s in regards to disaster mitigation does address the crucial theme of strategies for integrating hazard assessment and mitigation considerations within the context of environmental and development planning.⁴

3

A companion document, entitled Natural Hazard Management in Integrated Development Planning and which is directed towards planners and development practitioners, provides a more in-depth discussion of the technical aspects of mitigating the impact of natural hazards (OAS, 1990b).

4

It should be kept in mind that while the OAS manual addresses both slow and rapid-onset hydrological and geological hazards, the UNDRO manual only addresses rapid-onset hazards. The latter manual does not thus address hazards such as drought. Finally, it must be pointed out that neither of these documents discusses biological hazards such as pests.

These two particular documents were chosen in the construction the corpus of discourse samples for a number of reasons. Firstly, both documents are aimed at policy makers (albeit the UNDRO manual is primarily aimed at planners) and are thus intended to influence decision-making at the highest levels. Given the focus of the present thesis upon the implications of disaster vulnerability for the redefinition of political concepts of security, an analysis of disaster mitigation efforts at the policy-level is most appropriate. Secondly, both manuals (which are among the most recent examples of their kind) represent the 'state-of-the-art' in disaster mitigation and describe in an authoritative and categorical manner the impacts and causes of 'natural' disasters and potential mitigation measures for reducing losses associated with such calamities. Third, despite some inevitable overlap, the two manuals also complement each other in that the OAS text focuses on integrating natural hazard considerations in development planning while the UNDRO manual is concerned primarily with the processes of hazard, vulnerability and risk assessment themselves, albeit within a policy framework.

Finally, and perhaps most importantly, both of these manuals are explicitly intended as contributions to the **International Decade for Natural Disaster Reduction** (IDNDR) which was proclaimed and established by the United Nations General Assembly and intended to be a concerted global effort to reduce the ever-increasing impact of "natural disasters" (UNDRO, 1990). More specifically, the purpose of the IDNDR, which officially began as of January 1990, is the reduction of disaster losses through a "new emphasis on pre-disaster activities including planning, prevention and

preparedness; an innovative approach based on state-of-the-art scientific and technical knowledge will aim at reducing the vulnerability of society, through the participation of all sectors” (Ibid: 10). To achieve this objective, the IDNDR also emphasizes the need to integrate disaster prevention and preparedness into the national and local development planning processes. Among the more specific goals of the IDNDR are the improvement and dissemination of scientific and technical knowledge as well as the “promotion of increased technology and knowledge transfer to those at risk” while taking into account the “cultural and economic diversity among nations” (Ibid: 11).

As the description above suggests, the approach of the IDNDR to disaster reduction is highly technocratic and clearly embodies the ‘dominant view’ which, despite the trenchant criticisms to which it has been subjected over the past two decades, continues to dominate the field of hazard management (Hewitt, 1995b). Indeed, the degree to which the platform of the IDNDR has garnered support from various national and international organizations (i.e. UNDRO, OAS, World Bank) would seem to confirm the dominance of technocratic perspectives in the field of disaster management.

In light of these observations concerning the IDNDR as well as the results of the discursive analysis below, the analysis presented in this chapter rests on the assumption that the contents of the two manuals under discussion closely adhere to the dominant technocratic approach promoted by IDNDR and are thus representative of

“mainstream” approaches to disaster mitigation.⁵ Indeed, written in a formal style and combining to different degrees scientific, technical and policy elements, the two manuals in question, as we shall see, are clearly paradigmatic all of the discursive genre which could best be described as the “technocratic” or “geophysical” genre of disaster discourse. After a brief discussion and critique of the *relational* and *identity* functions of the UNDRO and OAS manuals, the remainder of this section examines in greater detail the *ideational* functions of the contents of these two samples of disaster discourse (see Chapter 3).

Problematizing Disaster and Vulnerability: UNDRO and the OAS

In terms of their identity functions, these two particular samples of discursive practice are highly conventional and clearly reflect the technocratic discursive genre within which they are inscribed. Indeed, both documents construct virtually identical subject positions, even though the emphasis of these positions varies between the two manuals.

The principal subject position set up in both texts is that of the text producers themselves: that is to say that of engineers and geoscientists as purveyors of objective scientific and technical knowledge in the field of hazard and vulnerability assessment. By so doing, the texts give voice to experts in the scientific and technical facets of

⁵

For an in-depth discussion of the characteristics of the technocratic perspective in hazard and disaster management, see Hewitt (1983b).

natural hazard mitigation and, in the case of the OAS manual, that of the technocratic development professional.

The second principal subject position set up by the text producers of this manual concerns the main audience for this text, who in this case are policy makers in technical, development and financing institutions. Indeed, as the text producers of the OAS manual explicitly state, the document in question is aimed squarely at policy makers in national planning ministries, development agencies (including technical cooperation agencies such as the OAS) and international financing institutions. In emphasizing the policy context within which hazard risk assessment and reduction are carried out, the text producers of the UNDRO manual also underscore the prominent role policy makers at the national, regional and local levels for effective hazard management. The importance of these actors in hazard management efforts springs in part from their authority to determine the allocation of scarce human and financial resources towards hazard mitigation (UNDRO: 9, 19). Moreover, within this context, the text producers continually reaffirm the position and responsibility of the state in overseeing and coordinating the implementation of disaster risk reduction measures (Ibid: 3-4).

Although the title of the latter manual would seem to suggest that it is aimed at policy makers and planners equally, the content of the manual is highly technical and is clearly aimed more so at those involved in planning efforts rather than those working at the level of policy formulation. Indeed, the primary aim of the text producers in publishing this document is to provide planners, engineers, architects and project

managers with a practical guide to the scientific and technical facets of disaster mitigation in order to fill a gap in their education. By so doing, the UNDRO manual also constructs and underscores the central subject positions for planners and administrators responsible for the formulation of disaster mitigation plans.

The two manuals also set up a number of other subject positions related to the hazard management problematic, the most prominent of which is that of 'local communities' with a particular emphasis in the UNDRO placed upon poorer communities who are most vulnerable to the impact of natural hazards. In the case of both texts, the need to acknowledge local communities as full partners in the formulation of hazard management strategies is emphasized (OAS, 1990: 14-15; UNDRO, 1990: 16, 22). Moreover, while conceding failures to do so in the past, the text producers of the OAS document assert the need to ensure the participation of local communities in the formulation and implementation of development projects within which hazard mitigation concerns are addressed (OAS, 1990: 15).

However, as we shall see, by framing the need to address the acute vulnerability of the poor in this manner, the two manuals in question also implicitly reproduce the subject position of the latter as dependent upon outside intervention to assure their safety. Indeed, as in most instances of development discourse, the OAS manual implicitly reifies the subject position of poor individuals and social groups as objectified human populations who must be subjected to development policies and practices in order to improve their living conditions and meet their 'needs' (Yapa and Wisner, 1995). Much the same can be said of the UNDRO manual which also

implicitly objectifies the poor as an 'at risk' social category whose vulnerability to disaster must be reduced through the efforts of planners, administrators and policy makers within the context of development efforts. A key textual strategy in this respect is the use of indirect forms of discourse representation throughout the text wherein the voice of those most vulnerable groups are represented through the voice of the OAS.⁶

Finally, in discussing the intended target audience of the document which they have put together, the text producers of the UNDRO manual identify a number of other actors who are implicated in hazard management and at which the manual is (nominally) targeted. Among these actors are NGOs, building contractors and suppliers of materials (1990: 3). The importance of NGOs in hazard management is also underscored in the OAS manual which states that such organizations are increasingly paying more attention to mitigation as opposed to being concerned solely with emergency preparedness and disaster response.

In terms of their *relational* functions, the two documents in question present mildly innovative aspects while remaining quite conventional in most respects. The principle innovative feature in both manuals, as implied in the discussion of identity functions above, is the emphasis placed upon the need for consultation with, and the participation of, local communities in the formulation of hazard management strategy within the context of development policies and projects (OAS, 1990: 14, 26-27).

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It should also be noted that the text producers utilize a distressingly small number of references for the various arguments and statistics contained in the text. This includes one direct quotation (OAS, 1990: 4) for which no source is indicated!

Indeed, the text producers of the UNDRO manual continually emphasize the need for a participatory, decentralized and non-hierarchical approach to both the formulation and implementation of risk reduction measures. In emphasizing the importance of these organizational mechanisms for hazard management, the text producers implicitly contribute to a crucial shift in the nature of the relationship between vulnerable individuals and communities “on the ground” and the administrative apparatuses of the state charged with hazard management. However, while such proposals may seem to contradict and nullify Hewitt’s critique of the “dominant view” in disaster management as being hierarchical and highly centralized (Chapter 1), the analysis in the following section suggests that the degree to which such proposals are truly innovative and effective is questionable.

Moreover, aside from this feature, the two manuals are resolutely conventional in their relational functions. Firstly, the technocratic experts maintain and (re)legitimate their monopoly of *savoir faire* in regards to hazard management while the burden of actually reducing the vulnerability of poorer communities remains primarily the province of planners and policy makers. Albeit both texts emphasize the importance of participation, they nevertheless assume that the necessary knowledge for reducing vulnerability comes “from above”, all of which only serves to reinforce top-down, technocratic approach to development and hazard management. Never is it acknowledged that the inhabitants of these communities may themselves possess the necessary knowledge: the necessary knowledge is to be dispensed by experts and is to

be received and assimilated by the grateful masses of the poor. Let us now turn our attention to the ideational content of the two volumes in question.

Ideational Functions: Conceptualizing Disasters and Their Mitigation

The narrative which underpins the OAS manual begins by briefly describing the extent of disaster losses in the Latin American and Caribbean regions in recent decades and outlining how previous development efforts have increased disaster vulnerability. More specifically, the text discusses the hydrological and geophysical characteristics of natural hazards and how their human impacts are linked to changes in land-use (particularly patterns of land occupation) and the exploitation of natural resources as a result of the implementation of past development policies and projects.

Noting that development assistance in some regions consists almost entirely of disaster relief and rehabilitation efforts (Ibid: 4), the text producers describe and emphasize the potential of reducing disaster losses through natural hazard management. Utilizing successful cases of hazard mitigation in the United States as examples, the text producers affirm the significant potential for reducing the impact of natural hazards in Latin America and the Caribbean. In order to reduce disaster losses successfully, the text producers assert the need to integrate hazard management considerations within the context of integrated development planning (see OAS, 1984) and, more specifically, environmental planning.⁷ Moreover, the text producers argue that, “in high-risk areas,

7

The term ‘environmental planning’ is defined here as the “diagnosis of the needs of an

sustainable development is only possible to the degree that development planning decisions, in both public and private sectors, address the destructive potential of natural hazards” (OAS, 1990: 11).

This last argument is central to the narrative which undergirds the conceptual infrastructure of the OAS document given that the primary purpose of this document is to sensitize policy makers in development agencies of the benefits of including hazard management considerations within the “project planning cycle”. Not surprisingly then, the last section of the manual examines strategies for promoting the benefits of systematic hazard management among the various categories of development assistance agencies which includes technical cooperation agencies (e.g. OAS), bilateral development agencies (e.g. AID, CIDA, OECD) and multilateral development banks (e.g. World Bank, IADB).

Among the potential strategies examined by the text producers for integrating hazard management considerations within the context of integrated development planning and the project formulation cycle are multicriteria analysis, conflict resolution methods and economic evaluation techniques. Moreover, the text also provides an overview of strategies for addressing specific hazards (hurricanes, drought and desertification, geologic hazards, floods and landslides) as well as strategies for addressing hazard vulnerability in selected economic sectors (energy, tourism and agriculture).

area and the identification of the resources available to it” (OAS, 1990: 9-10).

The OAS manual features a number of innovative and creative ideational features. Foremost among these is the attempt by the text producers to naturalize and institutionalize the view that natural hazards (i.e. negative resources) constitute an integral component of human-environment relations and are inextricably linked to questions of natural resource use (OAS, 1990: 1). By so doing, the text producers seek to modify the manner in which both environmental and integrated development planning are defined, conceptualized and operationalized.

Such a shift in the perspective and practices of planning, development and financing agencies would also contribute to a modification in the manner in which the concept of 'sustainable development' is defined and formulated by assuring the inclusion and integration of natural hazard considerations. By so doing, the manual contributes to breaking down the conceptual barrier (albeit only partially, as the analysis below suggests) between natural hazard management and development practices and thus contribute to dismantling the dichotomization of disaster and development wherein the impact of development policies upon hazard vulnerability is ignored and 'development' is automatically assumed to be the solution to hazard vulnerability.

To the degree that the text in question contributes to the transformation of the ideational dimension of the orders of discourse within and among development assistance agencies, the manual also produces non-discursive effects by promoting and contributing to institutional change among such organizations. Indeed, by asserting the need to integrate hazard management concerns within environmental and development

planning, the text producers also assert the need for a partial reallocation of financial and technical resources away from reconstruction efforts and towards the adoption of preventive measures.

This last point is crucial in so far as, at least at the time of publication, 90% of financial resources earmarked towards disaster management in Latin America and the Caribbean are allocated to disaster relief and rehabilitation measures, leaving precious few resources available for hazard mitigation efforts (1990: 4). By emphasizing the potential of hazard management for reducing disaster losses, the text producers thus aim to contribute to the modification of development policies and planning practices among the organization's member countries as well as international development assistance agencies.

However, in terms of its impact upon social relations and structures, this particular instance of discourse practice is also highly conventional in that it reifies the power and legitimacy of national and international development organizations as well as the financing agencies which support development projects. Unlike some of the more radical critiques of both development theory (Peet and Watts, 1996; Yapa and Wisner, 1995) and disaster management (Hewitt, 1983), the contents of the OAS manual do not seriously question the development project itself: they only question the manner in which development efforts are carried out. As the analysis in the following section illustrates, *both* manuals fail to make explicit the manner in which development has produced scarcity and exacerbated vulnerability (Yapa and Wisner, 1995). Thus, while the text producers affirm the need to change "the way development takes place"

(OAS, 1990: vi), they fail to question the purpose and goals of development, as well as the institutional arrangements which underpin these practices, in a critical manner. Instead, the text producers simply seek to achieve a higher level of efficiency and economic rationality through enhanced, technocratic forms of environmental and development planning. In this sense, the recommendations contained within this volume clearly work within the parameters of mainstream development thinking.

As for the problematization of disaster developed in the UNDR0 manual, it largely parallels that of the OAS manual while emphasizing different facets of the hazard management problematic.⁸ The opening section of this document deals with the policy context within which hazard management takes place. This particular instance of discursive practice rests upon two key narratives: that of the disaster-development continuum⁹ and the central role of the state in addressing and reducing disaster risks. More specifically, it discusses strategies for government administration of risk reduction measures (Chapter 2) and the institutional and policy contexts within which risk assessment, planning/decision-making and the implementation of risk reduction measures are conducted (Chapters 3-5).

8

The text in question is divided into four discrete sections examining issues of policy, hazard assessment, risk and vulnerability assessment, and hazard mitigation strategies. However, given the topic of the present thesis, the analysis below is restricted largely to the opening section concerning the policy context of hazard management.

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This term refers to the linkages between disaster relief and rehabilitation efforts on one hand and 'normal' development efforts on the other. Moreover, it highlights how the occurrence of 'natural' disasters heightens concern over hazard vulnerability and thus prompt the adoption of mitigation efforts.

As in the case of the previous manual, the UNDRO document features some creative and innovative features in terms of its ideational functions. Most prominent among these is the emphasis placed by the text producers upon “the economic risks to people who do not have the resources either to protect themselves or to recover from disasters as a result of their low income or poor access to credit” (Ibid: 3). Although the document in question is primarily a manual pertaining to the technical facets of risk assessment and reduction, the text producers nevertheless emphasize the acute vulnerability of poorer communities to the impact of natural hazards and assert the needs of such communities must be taken into account within the context of both risk assessment and risk reduction (Ibid: 3-4, 21, 24).

By emphasizing the economic risks faced by poorer communities as a result of hazard vulnerability, the UNDRO manual’s approach to risk reduction parallels somewhat Blaikie *et al.*’s (1994) definition of vulnerability and indirectly addresses the key theme of sustainable livelihoods (see next section). This emphasis upon economic risks to poorer communities also reflects Cutter’s (1996) distinction between the “geographical space” and “social space” of vulnerability. Although their use of the terms ‘risk’ and ‘vulnerability’ differ to some degree from the vulnerability analysis framework presented in Chapter 1, the text producers of the UNDRO manual nevertheless also emphasize the differential physical and economic vulnerability of poorer social groups to the impact of natural hazards. Moreover, in addition to poverty, the text producers also acknowledge and discuss, albeit very briefly, other

variables which impinge upon vulnerability to natural hazards including age and gender (UNDRO, 1991: 109).

In highlighting the differential physical vulnerability of poorer groups and, more particularly the economic risks associated with these vulnerabilities, the UNDRO manual thus contributes to a small yet potentially crucial and innovative shift in the discursive underpinnings of the hazard management field. However, the degree to which such a shift is possible, as well as its implications for concrete practice, is a question which remains to be answered. Nevertheless, there are some grounds for pessimism on this point. As the analysis presented in the following section suggests, making the economic risks faced by poorer communities a central priority in risk reduction efforts will require considerable political will which in many cases may not be forthcoming.

This point leads us to the need to examine the non-discursive implications of the discursive contents of the UNDRO manual in terms of its possible contributions to changes in the realm of concrete institutional practices. Beyond its promulgation of the benefits of integrating the geophysical aspects of hazard management into both the education and work of planners, the UNDRO manual also asserts (as does the OAS manual, albeit in greater detail) the need to integrate risk reduction measures within the context of integrated development planning (Ibid: 23).

A prominent facet of the policy section of the UNDRO manual is its emphasis upon the need for the formulation of a Disaster Management Act and, more particularly, the creation of a National Disaster Organization (NDO) in countries where

such institutional arrangements do not yet exist (Ibid: 9-10). Noting that many mitigation measures are local in origin and routine in nature, the text producers assert that the central goal of NDOs should be the promotion of “greater local self-reliance in responding to the risks from natural hazards” (Ibid: 9). Thus, instead of concentrating all arrangements for disaster and hazard management in the NDO, they argue that responsibilities for hazard management should be widely spread both vertically (i.e. at local, metropolitan, provincial and national levels of administration) and horizontally (i.e. among all government agencies whose activities may impinge upon hazard vulnerability). Within this context, the role of NDOs is thus to co-ordinate and inform the risk reduction efforts of various departments and levels of government.

Another prominent facet of the policy discussion of the UNDRO manual which holds considerable non-discursive implications is the insistence of the text producers that the implementation of risk reduction measures may require changes in state policies, practices and institutions which may be inadvertently exacerbating disaster risk (Ibid: 10). In making this argument, the text producers insist that

all related government policy areas need to be reviewed by a National Disaster Organization, to prevent the build-up of vulnerability caused by the unintended effects of government land use, agricultural or indeed any other policies. Implementing any such policy shift may involve, or necessitate, institutional change. This is because the institutional status quo may block policy change and thus inhibit comprehensive disaster mitigation (UNDRO, 1991: 10).

The number of sectors in which government practices need to be evaluated within a comprehensive hazard management effort includes *at least* agricultural policy,

building regulations, land-use planning, transportation policy, regional development policies, social security support services, and, finally, forestry and water resources (Ibid). The central preoccupation of such evaluations is to determine whether government policies in these sectors directly or indirectly encourage the occupation of hazardous zones and/or exacerbate the vulnerability of communities within these zones. Examples of the manner in which government policies can increase vulnerability include the subsidization of agricultural developments in hazard prone areas (which in turn encourage increased rates of settlement) as well as the implementation, within hazardous zones, of public building programmes which encourage private development and thus increased vulnerability. Finally, after determining the impacts of existing government policies upon vulnerability, it is essential to evaluate “(w)hat policy shifts are needed to reduce the vulnerability-increasing effects of existing government policies” (Ibid).

However, as previously pointed out, implementing such shifts may also require institutional changes. This in itself requires an evaluation of the effectiveness and efficiency of existing governmental institutional structures in terms of their capacity to reduce risk and vulnerability. Among the items which would need to be examined in an evaluation of this nature are institutional policy objectives, administrative jurisdiction, financial resources, enforcement powers, administrative flexibility and discretion, staff quantity and quality and decision-making effectiveness (Ibid).

This particular ideational function of the UNDRO manual is quite innovative in that it explicitly recognizes and addresses the role of the state in the social production

of vulnerability. However, as in the case of the other manual, the text producers fail to go far enough in their analysis and acknowledge the role of state-directed or supported development efforts in exacerbating the vulnerability of marginalized individuals and communities. Moreover, they by and large ignore the central role of power relations in shaping hazard vulnerability. This last point is made particularly clear in the closing paragraph of the discussion on institutional and policy appraisal, in which the text producers argue that

what is important in this analysis is that disaster mitigation in many situations may have more to do with *correcting* certain existing policy and institutional *imperfections*, rather than with the investment of new resources in the hope of buying communities out of their vulnerable situations (UNDRO, 1991: 10 [emphasis is mine]).

The quotation above clearly betrays the technocratic assumptions which underlie the problematization of disaster in this manual. By assuming that the source of the problem lies in “imperfections” in governmental policies and institutions, the text producers frame the issue of disaster proneness as a problem which essentially requires more ‘rational’ planning and management as well as increased efficiency. In so doing, the text producers not only depoliticize matters of hazard vulnerability, but also evade the crucial question of the role of development policies and projects in the social production of hazard vulnerability among marginalized groups. In other words, the approach to disaster reduction adopted within this manual rests upon the traditional deep-seated conceptual dichotomization of disaster and development in which the latter

(albeit with modest changes to existing policies) is viewed as the ultimate solution the former (Hewitt, 1995a).

From this perspective, it can be argued the hazard management strategies proposed within this manual constitute what Foucault describes as *technologies of normalization*. Dreyfus and Rabinow (1983: 195) define the latter as couplings of knowledge and power which act to systematically create, classify and control of anomalies in the social body which in turn must be treated, reformed and 'normalized'. More specifically, hazard management (as conceived by the text producers of the UNDRO manual) can be said to be a *technology of normalization* in so far as the latter

effectively transforms into a technical problem...what might otherwise be construed as a failure of the whole system of operation. Political technologies advance by taking what is essentially a political problem, removing it from the realm of political discourse, and recasting it in the neutral language of science. Once this is accomplished the problems have become technical ones for specialists to debate (Dreyfus and Rabinow, 1983: 196).

Finally, inextricably linked to the technocratic conception of hazard management adopted by the text producers is the crucial but largely implicit assumption that reducing the vulnerability of those who are at risk from natural hazards (i.e. poorer communities) is in fact a priority for the state. However, as Wisner (1993) has forcefully argued, the often taken-for-granted assumption in the hazard and disaster management literatures as to the rationality and *benevolence* of the state is, in many

contexts, open to question. In any case, the following section examines in greater detail some of the lapses and silences in the discourse of disaster presented in these two manuals.

Resisting Hegemony: The Social Production of Vulnerability

Much in the same way as recent critical analyses in the field of security studies suggest that the provision of 'security' by the state does not automatically increase the safety of the citizens of the state (Chapter 2), a number of observers have come to question the effectiveness of mainstream approaches to vulnerability reduction in reducing the vulnerability and enhancing the security of those who are the most affected by the impact of natural hazards (Chapter 1). Indeed, it would seem that the fundamental question of who and what is being 'secured' is as relevant to the debates concerning the reduction of hazard vulnerability as it is in the field of security studies. Moreover, if one accepts the argument that hazard vulnerability constitutes a significant indicator of human insecurity, responses to these queries in both of these fields are inextricably linked.

To the degree that the contents of the OAS and UNDRO manuals embody this hegemonic paradigm which holds sway among hazard management professionals, all three key functions (e.g. ideational, relational and identity) of these particular samples of discursive practice receive resistant readings from researchers adopting a more critical perspective. In order to demonstrate the linkages and parallels between practices of hazard management and political understandings of security, the use of a

number of keywords and concepts in the two manuals are analyzed in light of the central question of who and what is rendered 'secure' by the practices of hazard management. More specifically, the analysis presented below focuses upon three fundamentally intertwined concepts which undergird conventional approaches to hazard management: disaster, vulnerability, sustainable development.

Disasters and Vulnerabilities: Hidden Damages and Shadow Risks

A useful starting point in examining some of the resistant readings which the contents of these manuals receive is to analyze critically how the highly contested concepts of 'disaster' and 'vulnerability' are signified in these documents. Although both of these terms and concepts are widely recognized as ambiguous and highly problematic, they are generally utilized in these texts in either an ambiguous and undefined manner or (when defined) are implicitly assumed to be unproblematic. This is of great importance, for it is in these particular textual facets of discursive practice that the ideological and hegemonic struggles surrounding the field of hazard management are most apparent.

As discussed in the opening chapter, the term 'disaster' does not signify an objective event. Instead, this flexible and at times seemingly 'all purpose' signifier is a descriptive term utilized to loosely describe and characterize (in either qualitative or quantitative terms) the severity of a hazardous event. Given the wide variety of definitions and usages associated with the term, it is essential to scrutinize carefully the manner in which it is deployed for what constitutes a 'disaster' according to one

definition may not for others. Moreover, in light of the differential nature of hazard vulnerability (Chapter 1) it is essential for any analysis of hazards discourse to highlight how a given usage of the term responds to the question, either explicitly or implicitly, of for *whom* the impact of a natural hazard constitutes a 'disaster'.

In the case of the UNDRO manual, the text producers do not make any real attempt to define the notion of disaster. Instead, they simply assert that disasters are complex events whose prevention or mitigation is a multifaceted challenge and that "not everyone agrees on the priorities or what the subject (disaster mitigation) is mainly about" (UNDRO, 1991: iii). In the OAS document on the other hand, the text producers define "natural disasters" as hazardous events which cause "unacceptably large numbers of fatalities and/or overwhelming property damage" (1990: 7).

Drawing upon loss assessment data gathered by the OFDA, the text producers of the OAS manual characterize the impact of such disasters by utilizing four criteria: number of fatalities, number of people affected (excluding fatalities), economic losses and levels international assistance. In addition to these direct social and economic impacts, the text producers briefly note the importance of the effects of such disasters upon employment, balance of trade and foreign debt (Ibid: 1-4). However, the use of such statistics and variables to characterize and define the impact of natural hazards poses a number of difficulties.

Firstly, there is the widely recognized unreliability of statistics concerning economic losses and levels of international assistance (Albala-Bertrand, 1993, see esp. Chapter 2). Although the text producers describe the statistics provided by the OFDA

as “a conservative estimate of the impact of disasters” (OAS, 1990: 1), Albala-Bertrand (1993) has argued that most statistics pertaining to disaster losses tend to be anything but conservative. Indeed, noting that “basic statistics about disasters are not only incomplete but also inconsistent...between sources” (Ibid: 39), Albala-Bertrand argues that records of disaster loss suffer from *systematic overestimation*. Although there are a number of factors underlying this phenomenon, the most prominent among these is that of narrow political interests (Seitz and Davis, 1984: 235). As a number of observers have noted, the governments of developing countries often exaggerate human and economic losses in the immediate aftermath of a disaster in order to gain increased amounts of international assistance (Albala-Bertrand, 1993: 152).

In addition to problems of empirical accuracy, such quantitative measurements of hazard impact may also fail to take into account the *relative* importance of material losses sustained in a hazardous event. Thus, while the loss of subsistence crops and draught animals as a result of a floods may constitute a small financial loss in absolute terms, such losses can have far-reaching effects upon the resource access profile and livelihood strategy of poor and marginalized groups (Cannon, 1994). Indeed, citing examples in Nicaragua, Ecuador and El Salvador, Otero and Martí argue that

there are many recent instances where, unfortunately, the estimated overall damage was small compared with the size of the country's economy but represented very high losses for the population affected by family disruption, loss of assets, and the virtual impossibility of recovering productive capacity on their own. Frequently, these...(disasters) cause dramatic damage to individuals that goes unnoticed, particularly when the population affected is concentrated in rural areas and has low income

and few possibilities of presenting their plight to the authorities or potential donors (Otero and Martí, 1995: 23).

However, beyond these problems associated with the accurate quantification of disaster losses, there lies what Hewitt (1995a) has described as the *hidden damages* associated with the impact of natural hazards. These terms refer essentially to the disaster losses which are not captured by loss assessment statistics such as those discussed above. For example, in the case of drought or massive flooding in rural regions, the losses suffered by peasants whose livelihoods depend upon the raising of livestock or subsistence farming may very well remain 'invisible' and unaccounted for in disaster loss statistics in so far as such production functions largely outside of the market economy (Albala-Bertrand, 1993: 167). Thus, whether the losses of poor or marginalized groups are rendered 'invisible' because of their modest monetary value or because they occurred within the context of the informal economy, such losses tend not to be taken into account in quantitative economic assessments of disaster losses carried out either by modern state administrations or international organizations involved in disaster relief and recovery.

The lack of attention paid to the hidden damages incurred by poor or marginalized sections of society is clearly reflected in post-disaster responses. According to Albala-Bertrand (1993), such responses generally seek to 'counterbalance' the impact of natural hazards by restoring functioning economic flows and aggregate performance levels rather than the restitution of specific damages or losses of each affected unit. In other words, "counterbalance takes as a unit the wider

society and not specifically the restitutions of particular individuals, firms, and activities within it” (Ibid: 161). The problem with such an approach to disaster recovery is that affected units are not all necessarily compensated for their losses.

As Albala-Bertrand points out, ‘counterbalance’ is perfectly compatible (as is economic growth) with many people being definitely worse off (Ibid). Needless to say, the relatively minute financial losses (including those incurred within the informal sector) incurred by the poorer sections of the population do not rank very highly in terms of priorities in either disaster mitigation or recovery efforts. Indeed, disaster management organizations tend to emphasize the recovery of critical facilities and principle economic sectors at the expense of the needs of marginalized groups who tend to incur the greatest *relative* economic losses in ‘natural’ disasters. The sum of these observations thus strongly suggest that the designation of a particular calamity as a ‘disaster’ is far from unproblematic and that it is essential to specify *what* constitutes a disaster and for *whom*. Furthermore, the analysis above underscores the lapses and silences within hegemonic discourses of disaster which fail to highlight the insecurities and vulnerabilities of marginalized groups in the face of natural hazards.

This differential experience of hazard impacts is, of course, also directly related to the differential experience of *vulnerability* to natural hazards. As with the rather malleable concept of ‘disaster’, there are conflicting interpretations as to what exactly ‘vulnerability’ consists of and how it should be assessed (Cutter, 1996; Timmerman, 1981). This dispute over the meaning and content of the concept of vulnerability is crucial to the present inquiry in so far as it closely parallels debates pertaining to the

nature of 'security'. Indeed, there is a lack of consensus in both of these debates as to who or what constitutes the most appropriate *referent object* for security strategies and vulnerability reduction measures.

The following analysis examines how the concept of vulnerability is formulated in the OAS and UNDRO manuals in order to highlight precisely who and what is identified as the referent object(s) that are to be secured through hazard mitigation measures. In a critique parallel to that of the notion of the notion of disaster outlined above, it is contended that conventional formulations of vulnerability sometimes ignore the *shadow risks* faced by poorer or marginalized groups. The notion of shadow risks is directly related to that of hidden damages in that it signifies the physical and especially economic risks faced by marginalized individuals and groups which are habitually left unaddressed in conventional formulations of vulnerability.

Although the UNDRO manual makes a vague reference to the conceptual debates surrounding the notion of vulnerability (Cutter, 1996) by noting that there are "varying attitudes as to what vulnerability should cover" (UNDRO, 1991: 14), the text producers do not elaborate on what these "varying attitudes" are. As for the OAS manual, the text producers make absolutely no mention of these debates and thus fail to acknowledge the degree to which the concept of vulnerability is highly contested and far from straightforward.

Instead, the emphasis in both manuals is upon the various techniques and methodologies for assessing vulnerability defined as the expected degree of loss or physical damage to an *element at risk* as a result of exposure to a natural hazard of a

given severity. In the case of both texts (OAS, 1990: 15-16; UNDRO, 1991: viii), the term element(s) at risk refers to human populations, buildings and civil engineering works, economic activities, public services, utilities and infrastructure in a given area which are physically vulnerable to a given natural hazard. The degree of loss is expressed on a scale ranging from 0 (no damage) to 1 (total loss) (Ibid).

As outlined in the previous section, the aim of the text producers of the OAS manual is to promote the inclusion of hazard mitigation considerations within the context of integrated development planning and the formulation of investment projects. More specifically, the emphasis of the text is upon the reduction of economic losses through inclusion of structural and non-structural hazard mitigation measures in the planning and implementation of investment projects when and where these are deemed necessary *and* economically viable. Given that the primary function of the OAS is the promotion and facilitation of regional development, this focus is to be expected.

An example of the challenge posed by natural hazards is provided in the Introduction when the text producers note that

the investments are often at risk of both natural hazards and the side effects of development projects that exacerbate these hazards. For example, excessive erosion and siltation reduces the life of large multipurpose dams. Many smaller dams in the region also experience this type of damage: accelerated erosion caused by a hurricane filled half of the storage capacity of a reservoir in the Dominican Republic virtually overnight (OAS, 1990: 2).

To the degree that they focus on sectoral (e.g. energy, tourism, agriculture) hazard assessments, the primary concern to the text producers of the OAS manual is

clearly upon ensuring the economic viability of development projects in the face of natural hazards and, more generally, the reduction of disaster losses within the formal economy. Not surprisingly, the hidden damages incurred by the poorer sections of the population in disaster events remain unaddressed in the OAS manual. While losses in economic sectors such as tourism and agriculture certainly can briefly impinge upon the livelihoods (and long-term vulnerability) of poor or marginalized groups through the reduction of employment opportunities¹⁰ and a potential reduction of public services as a result of reduced taxation revenue for the state, these are far from being the only impacts upon the economic livelihoods of such people.

One partial exception to this tendency in the OAS manual concerns the brief remark by the text producers concerning the benefits to be gained by the poorer sections of the population through the inclusion of hazard mitigation considerations in the early stages of development planning. As the text producers note,

incorporating vulnerability reduction into development projects builds in resiliency for the segment of the populations least able to demand vulnerability reduction as an independent activity. A clear example of this situation was the landslide mitigation components of the metropolitan Tegucigalpa study: the principle beneficiaries were the thousands of the city's poor living in the most hazard prone areas (OAS, 1990: 22).

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It should be noted that, according to Albala-Bertrand (1993), the precious little data available concerning the relationship between disaster impact and unemployment suggests that disaster induced employment is more than compensated for (on an aggregate level) by rehabilitation and reconstruction efforts which require considerable labour.

While this particular hazard mitigation project may very well have benefitted the most vulnerable sectors of society¹¹, it would appear that in many cases, large-scale hazard mitigation projects only indirectly reduce the vulnerability of the poorer sections of society, if at all (e.g. Shaw, 1992). As Wijkman and Timberlake (1984) and El-Hinnawi (1985) have pointed out, the construction of flood protection works tends to increase the value of land to such an extent that the poor cannot afford to occupy them. Blaikie *et al.* (1994: 141) make a somewhat similar argument, noting that in the case of Flood Protection Drainage and Irrigation (FPDI) works in the Chandpur region of Bangladesh, such works tend to benefit mainly middle peasants and wealthy land owners. The increased flood protection which such projects may provide some poorer farmers or the landless appears to be a secondary consideration.

A direct consequence of these silences in the discourse of vulnerability in the OAS manual is the conceptual and operational marginalization of the shadow risks faced by poorer communities. While technical and engineering projects can be of great utility in the reduction of vulnerability, the availability of such protective items and techniques does not guarantee their *entitlement* to the people who may need them the most (Albala-Bertrand, 1993: 204). Indeed, as Cannon (1994) has forcefully argued, technical problems cannot be separated from their socio-political context. Albala-Bertrand (1993: 204) has gone even further by asserting that vulnerability “is primarily

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As is often the case in this document, no references are given. As a result, there is considerable difficulty in assessing the validity of this assertion wherein the voice of the poor of Tegucigalpa are represented through the voice of the OAS.

a socio-political issue rather than a question of protective technology or engineering works” . Nevertheless, governments and international organizations prefer technical engineering responses to hazard vulnerability precisely because such measures are less politically controversial than non-structural measures such as land-reform, progressive taxation or social security which could represent a threat to the established socio-economic and political order (Ibid: 27).

Although the text produced by UNDRO conceptualizes vulnerability much in the same way as the OAS manual, there are several crucial differences between the two. The first of these is the emphasis the text producers place upon the material vulnerability of poorer communities. They acknowledge that poorer communities are generally more vulnerable to the impact of natural hazards given that they are most often “forced by their economic circumstances to settle on hazard-prone land” (UNDRO, 1991: 3).

More importantly, as discussed in the previous section, they also emphasize the importance of the relative economic risks which these physical vulnerabilities pose to poorer communities (Ibid). By emphasizing how physical and economic risks are interconnected, the UNDRO manual attempts to direct the spotlight on the shadow risks associated with the hazard vulnerability of poorer communities. However, a detailed reading of the manual suggests that its emphasis on the vulnerability of poorer communities may be undermined by a number of latent contradictions in the text.

Most important among these is that of the different criteria (the examples provided are economic efficiency and social equity) used to establish disaster mitigation

priorities. Considering the manner in which the text producers emphasize the need to target poor communities in risk reduction efforts (e.g. UNDRO, 1991: 3, 4, 21, 24), one would assume that they would explicitly favour social equity as the guiding criteria, but they do not. Additionally, given the frequent allusions to the limited resources available to developing countries, the text also emphasizes the need for the efficient allocation of resources (Ibid: 15). Indeed, the text producers concede that economic criteria “tend to dominate mitigation procedures and practice” (Ibid: 6). All of which strongly suggests that, in practice, the criteria of economic efficiency is generally favoured over social equity as the principle criteria in determining vulnerability reduction priorities.

Furthermore, there is also the matter of the political context within which the planning and decision-making processes take place. As the text producers of the UNDRO manual point out, economic appraisals of hazard mitigation options (e.g. cost-effectiveness and cost-benefit analyses) do not in and of themselves determine the course of action to be taken. Instead, a number of other “non-economic factors” (which the text does not elaborate upon) also affect the decision making process. As a result, the text producers concede that “these decisions may ultimately be political or dominated by other constraints which override the economic analysis” (Ibid: 19). Nevertheless, despite these limitations, the text producers affirm that such economic analyses are still useful in so far as they help clarify the consequences of the decisions of policy makers (Ibid).

However, as a number of analysts have pointed out, it is precisely the lack of access to economic and *political resources* which often underlies the insecurity and vulnerability of poor and marginalized groups (Blaikie *et al.*, 1994). This observation is of utmost importance for the success of hazard management efforts. Despite the frequent references in the text concerning the need for consultation, participation and the decentralization of decision-making (UNDRO: 16, 19, 22, 24), these may not insure adequate representation of poorer communities in planning and decision making processes. A more detailed discussion of the problems associated with participatory mechanisms in planning efforts is presented in the next sub-section.

What these criticisms ultimately reveal is the failure of the text producers to acknowledge and address the impacts of development policies and projects upon the social production of differential vulnerability. The underlying causes of the vulnerability of poorer communities is ignored while development, albeit in a modified and supposedly sustainable form, is assumed to be the ultimate solution. This observation reflects the widespread tendency to depoliticize poverty and frame the latter as a purely technical problem (Pettiford, 1997) and highlights the importance of political struggles over the interpretation and satisfaction of “needs” within developing countries (Escobar, 1995: 224-225). Indeed, in so far as reduced hazard vulnerability is a necessary condition for the fulfilment of people’s genuine needs (Ibid), the highly political nature of differential hazard vulnerability must be underscored and transformed into a site of political debate. In any case, by failing to elucidate the root causes and dynamic pressures which underlie the unsafe living conditions of poorer

communities, such conceptualizations of vulnerability may very well prove to impede rather than facilitate risk reduction (Hewitt, 1983; 1995a).

These observations have important implications for the elucidation and comprehension of the environment, security and disaster nexus. They suggest that it is essential to carefully scrutinize *who* and *what* is included (or excluded) in specific conceptualizations of vulnerability if matters of hazard vulnerability are to be included in new formulations of security. It is in this sense that the conceptual muddle signified by the term 'vulnerability' resembles that of 'national security': both are characterized by the absence of a consensus as to what should be their *referent object(s)*.

Sustainable Development and Hazard Management: A Symbiotic Relationship?

The previous section explored how the symptoms ('disaster') and causes ('vulnerability') of the human impacts of natural hazards are signified in some of the mainstream literature on hazard mitigation. This second section investigates how 'sustainable development' is signified and conceptualized within the OAS and UNDRO manuals as the *solution* to hazard vulnerability. More specifically, the analysis below highlights some of the ambiguities and contradictions which surround the notion of sustainable development and draws out the consequences of these problems for the reduction of hazard vulnerability. Although an in-depth examination of the relationship between sustainable development and hazard management is clearly beyond the scope of the present thesis, this brief analysis does nevertheless serve to highlight those

aspects of this relationship which are most salient to the debates regarding the formulation of alternative conceptualizations of security in the global political arena.

Although statistical analyses suggest that economic development reduces vulnerability to natural hazards on an *aggregate level* (given that post-industrialized countries experience much lower casualty rates and *relative* economic losses), it is undeniable that numerous practices associated with development policies and projects have exacerbated hazard vulnerability within and among developing countries (Munasinghe and Clarke, 1995; Anderson, 1995). As Blaikie *et al.* (1994: 17) have pointed out, the development literature abounds with cases where development policies have had 'unintended consequences' (i.e. ecologically unsustainable resource and the migration of marginalized groups on hazard-prone lands) which have exacerbated the vulnerability of marginalized groups to the impact of natural hazards. These tendencies have been observed for a number of natural hazards including drought (e.g. Krings, 1995; Sweringen, 1992; Liverman 1990; Watts, 1983a), flood (e.g. Chan and Parker, 1996; Mulwanda, 1989) and earthquakes (e.g. Oliver-Smith 1994; Hewitt, 1992).

While the majority of development agencies have, at least rhetorically, wholeheartedly embraced issues of sustainable resource use within their agendas, they have tended to avoid becoming involved in issues of disaster mitigation (OAS, 1990). This tendency is somewhat puzzling given that past development practices have increased hazard vulnerability and that losses from 'natural' disasters are viewed by many to pose a serious impediment to economic development (Munasinghe and Clarke, 1995). According to the OAS (1990: 4), direct and indirect economic losses from

'natural' disasters in Latin America and the Caribbean have in some cases been "so large that development aid is devoted entirely to disaster relief and rehabilitation; leaving precious little for new investment in infrastructure or economic production".

However, it is crucial to bear in mind that there is considerable disagreement as to the relative importance of the economic losses incurred by developing countries in cases of 'natural' disasters (Jones, 1993). According to Albala-Bertrand (1993) such calamities, with the exception of prolonged droughts in predominantly agricultural economies, do not generally affect the long-term economic development prospects of developing countries. Moreover, he points out that "(a)t the macro-economic level, disasters rarely affect the performance negatively and often, if anything performance tends to improve in the first two post-disaster years, returning to previous rates afterwards" (Ibid: 203).

Despite these uncertainties and disagreements, concern over economic setbacks as a result of 'natural' disasters has led to a gradual shift in development discourses on the subject of hazard management. This shift is epitomized by numerous proposals in recent years to consider the mitigation of 'natural' disasters as an integral component of *sustainable* development (Munasinghe and Clarke, 1995; OAS, 1990). Given the continuing presence of relatively lower levels of vulnerability within and among developed countries, the question remains as to whether economic development, in a modified and ecologically sustainable form, can lead to similarly low levels of vulnerability among developing countries.

Unfortunately, proposals concerning the integration of hazard vulnerability issues within the context of sustainable development are often ambiguous, contradictory and highly problematic. The central problem which plagues such proposals is the lack of a universally accepted definition of sustainable development (SD) and the usage of a number of contradictory interpretations of the concept. Not only is there a lack of consensus as to how to achieve SD, but even the *purpose* and *goals* of SD are contested. While many speak of the 'concept' of sustainable development, "the vast and rapidly growing body of literature does little to analyze critically the meanings loaded onto the phrase" (Adams, 1995: 87). Moreover, as some of the critical analyses of the notions of 'sustainability' and 'sustainable development' (e.g. Yapa and Wisner, 1995; Sachs, 1993) which have recently surfaced clearly suggest, the firm entrenchment of the notion of sustainability in development discourses in no way ensures an ecologically viable future.

Nevertheless, despite the highly contested nature of SD, a dominant 'mainstream' formulation of the concept as promoted by such international organizations as IUCN, WWF and The World Bank has clearly emerged in recent years (Lélé, 1991). Such mainstream interpretations of SD are characterized by their technocentric approach which essentially aims to include environmental factors in development planning in order to achieve economic development without undue environmental costs. It is thus a reformist perspective which seeks to achieve a more inclusive and 'rational' form of developmental planning (Adams, 1995: 89).

Drawing upon Lélé's (1991) critique of mainstream formulations of SD, the following discussion focuses upon two key criticisms of such formulations: the inadequate elucidation of the links between poverty and environmental degradation and the insufficient conceptualization of the three objectives of SD as identified by Lélé: the removal of poverty, sustainability and participation. Accompanying the discussion of each of these critiques is an examination of their implications for the reduction of hazard vulnerability.

Mainstream formulations of SD tend to conceptualize the link between poverty and environmental degradation as a direct two-way relationship which is mutually reinforcing. Within this conceptual framework, the existence of poverty is taken as an analytical point of departure and is assumed to be, along with associated factors such as lack of education, the primary cause of land degradation which in turn reinforces conditions of poverty. Proposed solutions to these closely intertwined problems are techno-economic in nature and include increased technical know-how and managerial capability (Lélé, 1991).

Unfortunately, the larger socio-political context within which processes of land degradation occur, including questions of power relations, land distribution and foreign debt are ignored in such problematizations of environmental degradation. This lack of analysis of the specific social contexts within which these problems occur can lead to an improper conceptualization of problems such as soil erosion (Zimmerer, 1996) and deforestation (Jarosz, 1996). By failing to conceptualize adequately, and by extension address effectively, issues of land degradation, mainstream formulations of SD may

thus prove to be inadequate to address this crucial dynamic pressure which underlies increased hazard vulnerability worldwide.

This failure is starkly illustrated by the OAS manual's insufficient conceptualization of the causes vulnerability. In the section titled 'Natural Hazards and Development', the text producers argue (Ibid: 2) that "(w)hile the development efforts of the past have brought economic advancement to many parts of the world, they have also brought unwise or unsustainable uses of the natural resource base" which in turn has reduced the capacity of ecosystems to mitigate the impact of natural hazards.

What the text producers fail to point out here is that while some social groups have enjoyed the material benefits of economic growth as a result of development efforts, this has been achieved at the expense of the livelihood security, and increased hazard vulnerability, of marginalized groups (Albala-Bertrand, 1993; Hewitt, 1983a). Indeed, the qualifier 'in many parts of the world' fails to communicate even in the slightest way how modernization and development policies have contributed to processes of economic and ecological marginalization which in turn have exacerbated hazard vulnerability among marginalized groups. By so doing, the text producers thus fail to acknowledge the differential distribution of benefits and risks of economic development.

Inextricably linked to the problems of poverty and environmental degradation is the issue of population growth. While population growth is often viewed as primary cause of environmental degradation (Adams, 1995) as well as increased hazard vulnerability (Anderson, 1995), such causal relationships are anything but simple and

straightforward (Wisner, 1995). In his recent critique of a series of World Bank reports on the problems and prospects of SD in Sub-Saharan Africa, Gavin Williams (1995: 163-164) argues that the common model of the linkages between population growth, environmental degradation and agricultural production which is put forth in various Bank documents is conceptually flawed and ignores historical evidence that population growth and reduced land degradation in some cases *coincide*. As in the case of the poverty-environmental degradation nexus, the lack of proper conceptualization and contextualization of the relationship between population growth and environmental degradation can only lead to ineffective policies (Ford, 1995; Hartmann, 1995).

This critique also applies to the relationship between population growth and hazard vulnerability. While not denying that rising population is a component of disaster vulnerability, Blaikie *et al.* (1994: 34) point out that there is considerable debate as to whether population growth is a cause or consequence (or a complex interaction of both) of poverty within developing countries. Indeed, population growth can be viewed as both a cause *and consequence* of precarious livelihoods of which vulnerability to natural hazards is but one dimension. As a result, the validity of the argument that population growth is directly related to increased hazard vulnerability has proven to be difficult to ascertain.

In light of these observations, Blaikie and his colleagues argue that it is essential “not... to accept a simplistic linking of population growth with vulnerability that suggests more people suffer more disasters because there are more of them in dangerous places” (Ibid: 34). Numerous other contextual factors, including patterns of

land distribution and entitlement to protective engineering works in the case of hazards such as floods and earthquakes, also determine vulnerability. Additionally, in the case of drought triggered famine, a series of case studies have undermined the credibility of Malthusian explanations which posit a direct linkages between population growth, drought and declining food production leading to famine (e.g. Bohle, 1994). Thus, the simple linear relationship between population growth and hazard vulnerability put forth by some analysts (e.g. Burton *et al.*, 1978) is clearly insufficient for the conceptualization of the concept of vulnerability.

The second major weakness of mainstream formulation of SD is the inadequate conceptualization and failure to operationalize what Lélé identifies as the three main goals of SD: the removal of poverty, sustainability and participation. Since poverty is generally viewed as a primary cause of environmental degradation in the context of developing countries, its removal is deemed essential if sustainability is to be achieved. Although the Brundtland Commission report Our Common Future emphasized the importance of both economic growth and more equitable distribution of income in order to reduce poverty (WCED, 1987: 50-51), in practice emphasis is more often than not placed solely upon growth. However, such proposals are quite ironic given that the inability of economic growth *per se* to eliminate poverty that led to the adoption of the basic needs approach in the 1970s (Lélé, 1991: 614).¹² More importantly, by

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However, as Yapa and Wisner ironically note, the 'basic human needs' approach which emerged during this period "rarely and only superficially focussed on the satisfaction of basic needs" (1995: 106).

taking the existence of conditions of poverty as a given, such approaches to poverty reduction fail to address the role of the project of development *itself* in the creation of scarcity and poverty (Yapa, 1996). In any case, the underlying causes of poverty (a key variable of hazard vulnerability) remain unaddressed in both the OAS and UNDRO manuals.

The weak conceptualization of the notion of sustainability is also deeply problematic. What exactly do mainstream formulations of SD seek to 'sustain'? Economic growth? Ecosystems? Livelihoods? This is no mere semantic question, for the implicit or explicit definition of sustainability which underpins development policies determines whether or not such policies are truly ecologically viable. In some cases, the term 'sustainable development' is used to signify 'sustained (i.e. continued) economic growth'. While economic growth is, as discussed above, often viewed as necessary in order to reduce poverty and by extension environmental degradation, such a conception of sustainability in no way guarantees to lead societies towards a more ecologically viable use of resources (Ekins, 1993). In such cases, the use of the term 'sustainability' has far less to do with promoting ecological sustainability than with maintaining and re-legitimizing long-standing priorities of economic growth.

The conception of SD utilized by the text producers of the OAS manual implicitly reflects such a conception of 'sustainability'. By arguing that SD is only possible "to the degree that development planning decisions, in both public and private sectors, address the destructive potential of hazards" (1991: 4), the text producers assume hazards are primarily a problem *for* development. The explicit focus of the text

is thus upon the impact of such hazards upon development projects and economic sectors. While the impact of development practices upon environmental degradation, and by extension hazard vulnerability, is acknowledged by the text producers (Ibid: 8-9), the focus is shifted towards the impact of hazards upon SD implicitly defined as 'sustained' economic growth. In this sense, the problem of ecological sustainability is conceptually reversed in so far as environmental degradation is framed as an important cause of disaster losses and thus a barrier to sustainable economic development.

While the UNDRO document does not explicitly address the SD theme, the text producers of this manual do nevertheless also affirm the need to integrate hazard mitigation concerns within the context of development efforts (1991: 9-10, 24).

Moreover, the text producers of the UNDRO manual argue that such an integration is necessary in order to avoid development policies in a number of areas (e.g. agriculture, industry) which might inadvertently exacerbate hazard vulnerability. However, to the degree that the UNDRO manual's elucidation of the relationship between development processes and hazard vulnerability among poorer communities is quite weak, the text in question implicitly supports and reinforces the OAS manual's conceptualization of 'sustainable' development.

While the deployment of this discourse of 'sustainable growth' is in many ways counterproductive, discourses of sustainability which focus explicitly on the health of *ecosystems* may also, ironically, lead to ecologically unsustainable practices. As Fitzgerald (1994) has convincingly argued, emphasizing environmental conservation at the expense of those whose livelihoods depend upon direct access to natural resources

for food, fuel and fodder not only exacerbates the vulnerability of marginalized groups, but also contributes to unsustainable resource use given that such groups may be forced to over-exploit what resources are available in order to, at least temporarily, maintain their livelihoods. In other words, by attempting to focus purely on the sustainability of ecosystems and ignoring the vulnerability and sustainability of *livelihoods*, mainstream formulations of SD may only exacerbate processes of land degradation. In light of these problems, Fitzgerald (Ibid: 136) concludes that “the commitment of governments and donors to the inadequately defined concept of sustainability may actually create more problems than it solves”.

Instead of focusing exclusively on the sustainability of ecosystems (or economic growth), the notion of sustainability must focus upon livelihoods since “sustainable development can only be achieved by targeting people rather than land” (Ibid). The notion of “sustainable livelihoods” (Wisner, 1995) is crucial in the context of the present thesis in that it is directly linked to the vulnerability reduction agenda of Blaikie *et al.* (1994) who argue that the promotion of sustainable livelihoods is essential to achieving a sustainable reduction of disasters. While the WCED asserted in one report that the goal of sustainable development should be “sustainable livelihood security” (Ibid: 18), it would appear that the livelihoods of the poorest sections of society in developing countries continue to be sacrificed in the name of development, regardless of whether the latter is labelled as “sustainable” (Yapa and Wisner, 1995).

The final conceptual weakness of mainstream formulations of SD, as identified by Lélé, concerns the notion of ‘participation’. While in the early 1980s the concept of

SD was intimately linked to notions of equity and social justice, these were gradually downplayed and supplanted by the notion of participation which became a central theme within mainstream formulations of SD (Lélé, 1991: 615). Utilizing terms such as equity, participation and decentralization in an interchangeable manner, mainstream formulations of SD seemingly imply that all of these notions are roughly equivalent. However, while some form of participation is certainly necessary to achieve sustainability, it is far from being sufficient to achieve the original goals of equity and social justice which are viewed by many to be essential to achieving ecological sustainability (e.g. Kothari and Parajuli, 1993; Wisner, 1990).

The criticisms which Lélé and other have levelled at the promotion of participation within mainstream formulations SD also largely apply to the frequent calls for participation within the context of hazard management. Indeed, as some of the recent literature regarding the implementation of environmental and social impact assessment in developing countries suggests, there are considerable grounds for scepticism of such proposals. As Kakonge and Imevbore (1993) have pointed out, the application of such assessment methods in the context of developing countries has been widely criticized as a result of the lack of participation and consultation. Moreover, as Rickson *et al.* (1990: 223) note that proposals concerning consultation and participation in development and disaster mitigation planning seem to take for granted the presence of Western social-liberal traditions which in some instances may be “incompatible with the established social and political institutions of the Third World”. In light of these

observations, proposals regarding the promotion of participation in the context of hazard management must, to say the least, be regarded with some scepticism.

The particular proposals put forth in the OAS and UNDRO manuals regarding the use of participatory mechanisms does little to displace this sense of scepticism. For example, in the context of integrated development planning, the text producers of the OAS manual argue that potential social conflicts arising from development projects (such as a proposed dam) can be dealt with through the use of conflict resolution techniques by environmental planners. Although the text producers concede that groups which lack political and economic power are rarely fully represented in such decision-making forums, they nevertheless encourage policy makers (with a rather weak sense of optimism!) to assure the participation of all relevant social groups in environmental planning efforts is essential for *equitable* solutions to development problems (Ibid: 27).

Meanwhile, in the case of the UNDRO manual, the text producers assert the importance of participation (1991: 24), consultation (Ibid: 19) and community debate (Ibid: 16, 22) in the formulation of risk reduction strategies and their implementation. Arguing that planning efforts which are hierarchical in nature are self-defeating in so far as they are unresponsive to community needs, the text producers assert the need for a balanced and participatory disaster risk reduction system.

Unfortunately, as noted in the previous sub-section, the lack of political resources is one of the principal factors which underlie the social production of vulnerability. As a result, the implicit assumption that the promotion of participation

within the context of hazard management will somehow circumvent the social structures and processes which have exacerbated insecurity and vulnerability among marginalized groups must be held as suspect.

The formulation of the Bangladesh Flood Action Plan (BFAP) in Bangladesh clearly illustrates a number of the criticisms outlined above. As Blaikie *et al.* (1994: 138-143) explain, there is considerable controversy surrounding the Plan given the presence of widespread disagreement as to what is the most appropriate response to this particular flood hazard. While some studies recommend a 'high-tech' engineering approach involving the costly construction of anti-storm surge bunds and high embankments along the length of main rivers, others studies favour a 'low-tech' response which involves a 'living-with-floods' approach. This latter approach involves the support and reinforcement of indigenous adjustment strategies which would not limit the access of poorer social groups to scarce resources (e.g. Rasid and Paul, 1987).

A number of observers argue that 'high-tech' flood prevention schemes may not only cause considerable long-term damage to the livelihoods of marginalized groups, it may even increase the exposure of these groups living along the main rivers and on islands in the river channels to flood hazards (Boyce, 1990). Moreover, the costly engineering projects are likely to mainly benefit wealthy and influential urban based groups who wish to protect their land and property in towns and cities and in areas where Green Revolution projects are present (Blaikie *et al.*: 141). As a result, an over-

emphasis upon the use of such structural mitigation measures could reinforce social inequities and exacerbate hazard vulnerability.

A key factor in determining what hazard management strategy will be adopted and implemented is the participation of those sectors of the public whose livelihoods and safety would be affected. Unfortunately, in the socio-political context of a country such as Bangladesh, ensuring the participation of marginalized groups is far from being a straightforward proposition. As Boyce has argued

(s)o far, the supposed beneficiaries of flood control- the country's poor majority -have been virtually excluded from the decision-making process. The World Bank...concedes that past embankment projects have been undermined by deliberate cutting of embankments by disgruntled farmers and fishermen, and hence calls for "closer involvement of the beneficiaries" and "more cooperation among farmers". It provides no inkling, however, of how these are to be achieved in a context of military-based rule and a highly inequitable land ownership pattern (Boyce, 1990: 427).¹³

In summary, the relationship between SD and hazard vulnerability reduction is far from clear. Depending on how it is defined, conceptualized and operationalized, SD could either maintain or exacerbate existing livelihood insecurities (e.g. restricting access of poor and marginalized groups to resources) in the name of economic development or environmental conservation or it could help reduce the vulnerability of

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Nevertheless, despite these concerns, it should be noted that the government of Bangladesh recently changed its strategy by moving away from a strictly structural approach to flood mitigation and adopting a strategy in which structural and non-structural measures are combined (Paul, 1997). However, whether this shift will result in a long-term reduction of hazard vulnerability and enhanced livelihood security for marginalized groups remains to be seen.

marginalized groups in developing countries to environmental hazards by promoting sustainable livelihoods.

While it may very well be the nebulous character of the concept of SD which makes it so politically useful (Adams, 1995), the achievement of a greater degree of social equity and ecological justice (Sachs, 1995) will require a clear and explicit consensus on the meaning and goal of 'sustainability'. This task will include the explicit identification of *who* and *what* is to be sustained, as well as a broader and more comprehensive conceptualization and contextualization of the causal factors (i.e. social, political, cultural and economic variables) underlying environmental problems. Finally it will require a more grassroots approach which aims to achieve social justice and sustainable livelihoods.

Governmentality and Hazard Management: Security for Who?

Whereas the previous section examined the perspective and epistemology of the dominant view (i.e. how the latter conceptualizes the impacts, causes and appropriate responses to 'natural' disasters) in the hazard management field, this section questions the effectiveness of the organizational arrangements which have been created to mitigate and manage such calamities. However, the analysis presented below is inextricably linked to, and draws upon, the analysis of the previous section given that the hegemony of the dominant view is directly related to and reflects the perspectives, powers and interests of the administrative apparatuses of the modern state which deal with the mitigation of such catastrophic events. Indeed, as Hewitt has forcefully

argued, the social construction of disaster which underpins and guides the activities of such organizations represents “...a creative encoding of the *ends* and *workings* of this kind of organization [emphasis added].” (Hewitt, 1995b: 333)

Noting that discourse critique does not occur “in a vacuum or in terms of its own making”, Hewitt asserts that the success of such a critique depends upon “examining the relations or arguments running between goals and outcomes, evidence and priorities, concepts and practices” (1995a: 117). In other words, it is essential to address the dialectical relationship between the discursive and non-discursive components of hazard management practices by highlighting the relationship between particular social constructions of disaster and the goals and interests of the organizations which deploy such constructions. A particularly useful tool for drawing out these relationships is the concept of *governmentality* as originally formulated by Foucault (1991).

The concept of governmentality is characterized by Murdoch and Ward (1997) as being primarily concerned with the manner in which the state

‘problematizes’ life within its borders and seeks to act in response to the resulting ‘problematizations’. In short, governmentality refers to the methods employed as the state both represents and intervenes in the domains it seeks to govern (Murdoch and Ward, 1997: 308).

The import of this concept lies in its ability to shed light, in a way conventional political theory fails to do, upon the techniques and procedures utilized by the state to constitute, consolidate and maintain its control and authority over its territory and population. Rather than focusing on institutions, the concept of governmentality thus

focuses on the *activity* of government by raising the question of *how* government should be conducted and examining

how the objects of policy are *problematized and rendered amenable to administration via particular forms of expertise and knowledge practices* [emphasis added]. All governments depend on both the modes of representation that make visible the domains to be governed, and the techniques of intervention that make government...possible. (Murdoch and Ward, 1997: 310)

In a recent and wide-ranging critique of hegemonic discourses of hazards and disaster, Hewitt has deployed the concept of governmentality to highlight the socially constructed nature of 'disaster' in terms of the practices and powers of centralized organization as well as the concerns of such organizations with maintaining 'control' in times of disaster (1995b: 331). Noting that most hazards research focuses upon the scientific, technological and organizational problems of governmental apparatuses charged with hazard and disaster management, Hewitt argues that such research is primarily concerned "with how disasters look from above, abstractly, and at a distance" (Ibid). In other words, the intertwined problematics of hazard and disaster management are socially constructed around institutions and viewpoints of power. Although this very well may be inevitable given the manner in which most of those work in this field obtain employment and research funds, this almost exclusive focus upon problems of organizational sociology also "results in a rather limited sense of the social content of disaster" (Ibid).

This last comment echoes the discussion of shadow risks and hidden damages in the previous section which suggested that conventional approaches to both hazard and

disaster management fail to grasp the nature of people's experience, particularly among marginalized groups, of vulnerability and disaster on the ground. The twin problematizations of hazard management examined in the previous section largely fail to address the social, political and economic root causes and dynamic pressures which lead marginalized groups to live in unsafe areas and engage in unsustainable forms of resource use which may exacerbate the number or severity of hazard triggers.

By so doing, mainstream perspectives in hazard management contribute to rendering 'invisible' the role of economic development policies in exacerbating hazard vulnerability among economically, politically and ecologically marginalized groups. In this way, the dominant view contributes to the reproduction of the logic of economic development. Moreover, this tendency is paralleled and compounded by conventional approaches to disaster management which often simply maintain, or even reinforce, socio-economic processes which contribute to hazard vulnerability and reproduce unsafe conditions (Chapter, 4).

The quotation at the beginning of this chapter mirrors the lacunae, lapses and silences unearthed in the analysis of mainstream formulations of the concept of vulnerability presented in the preceding section and suggests the central importance of explicitly articulating whose vulnerability is at issue in hazard management efforts. This involves the disaggregation of the geographical and social spaces of vulnerability (Cutter, 1996) in order to address the plight of those who are least able to avoid, absorb or recover from the impact of natural hazards. Unfortunately, within mainstream approaches to hazard management, enhancing the security of more

vulnerable groups seems to be less of a priority than ensuring the restoration of economic productivity.¹⁴ The two case studies of mainstream approaches of hazard management discussed earlier would seem to bear out these criticisms. This is particularly true in the case of the OAS manual in which the conceptualization of vulnerability fails to address the acute vulnerability of marginalized groups explicitly. Although the UNDRO manual does make a valiant effort to do so, lapses in the text's argumentation (i.e. conflicting criteria in hazard management planning) compromises its emphasis upon the risks faced by marginalized groups in the face of natural hazards.

What is crucial to keep in mind in the context of the present thesis are the numerous similarities and linkages between the manner in which the modern state has come to problematize "natural disasters" and threats to "national security". Both of these problematizations focus upon threatening external agents (i.e. natural hazards in one case, foreign military powers and domestic 'subversives' on the other) against which a particular identity (i.e. economic development and the project of modernity) must be 'secured'. By attempting to refine, enhance and reinforce the logic of economic development without raising more fundamental questions as to its role in the social production of vulnerability, mainstream approaches to hazard management contribute to enhancing national security understood as the protection of the *status quo* from a threatening external enemy.

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Which, in theory, helps to alleviate poverty which is viewed as the primary factor underlying hazard vulnerability.

From the perspective of the environment and security debates, this use of what Gilbert (1995) describes as the “war paradigm” within hazard and disaster management (in which Nature remains the primary agent in disaster etiology) dovetails quite nicely with newly emerging articulations of national and international security which view the environment (including the sphere of natural hazards) as a geopolitical threat (Dalby, 1996b). Unfortunately, what neither of these problematizations fully acknowledges is that model of development which is being ‘secured’ is a central factor in the social production of insecurity and vulnerability, particularly for the economically and politically disenfranchised members of the polity.

In addition to sharing assumptions similar to those which pervade the field of security studies as to the appropriate referent object of security, mainstream perspectives in hazard management also share, albeit to a lesser degree, parallel assumptions concerning the role of the state as the sole guarantor of security. While the text producers of the OAS and UNDRO manuals assert the importance of non-state actors such as NGOs in hazard management efforts, the state (along with development assistance agencies which work in concert with the latter) remains the prime mover in efforts to mitigate ‘natural’ disasters (e.g. UNDRO, 1990: 3-4).

However, as seen earlier, the efforts of the state to mitigate the impact of natural hazards is in many cases compromised by its complicity in development activities which may exacerbate hazard vulnerability (Cannon, 1994). Moreover, given the manner in which issues of resource scarcity, environmental change and hazard vulnerability overlap and are inextricably linked, the inability of state institutions to

address the root causes of these various problems is not unrelated. While this argument does not, of course, preclude a constructive role for the state in reducing vulnerability, it does point towards the need to rethink the assumptions and goals which underlie the role of the state in the provision of social protection (Hewitt, 1995b).

In summary, the questions of governmentality which Hewitt has raised within the context of hazard research and management are of central importance to the present study in that they directly parallel the critical inquiries in the realm of security studies as to how the state problematizes threats to safety and 'security'. Close examination of these parallels and linkages strongly suggests that analysts of the environment and security nexus must exercise extreme caution as to the manner in which hazard vulnerability concerns are linked to alternative frameworks of security. More specifically, it is essential that the latter do not inadvertently reproduce and reify a conceptualization of hazard management (as well as disaster response) which obfuscates the socio-political and economic processes which underlie the social production of hazard vulnerability and, by so doing, contributes to legitimating a development paradigm which enhances the well-being of some social groups while exacerbating the insecurity and vulnerability of marginalized sections of the polity.

Conclusion

The analysis presented in this chapter has demonstrated how the perspective, epistemology and organizational arrangements which characterize the 'mainstream' within the hazard management field are susceptible to many of the same conceptual

criticisms levelled at national security institutions. More specifically, the hegemonic technocratic discourses on hazards and disaster share assumptions similar to those underpinning traditional national and international security thinking as to the most appropriate referent object of security as well the role of the state in the provision of security. By highlighting these similarities and linkages, the preceding analysis has demonstrated why the incorporation of hazard and disaster management concerns in alternative formulations of security must be undertaken with great care.

Conclusion

Summary

The principal argument around which this thesis revolves is that matters of human vulnerability to natural hazards have thus far been largely marginalized in analyses of the relationship between problems of ecological and environmental sustainability and the discursive and material practices of security within global politics. The import of this lacuna in such analyses is considerable in so far as vulnerability to natural hazards is a central, though often neglected, component of human-environment relations and is inextricably linked to questions of (sustainable?) economic development. However, at the same, hazard researchers investigating the social processes which underlie hazard vulnerability have generally failed to elucidate the direct and indirect role of the security practices of states in exacerbating human vulnerability to natural hazards.

In the same way as the juxtaposition of environment and security concerns has produced numerous and often conflicting analyses as to the intellectual and political merits (and potential consequences) of framing environmental issues in security terms, the implications of integrating matters of hazard vulnerability within security analyses depends upon the political assumptions which underpin them. The approach adopted in the recent and seminal work by Pettiford (1995) on this topic largely consists of highlighting the socio-political and economic impacts of 'natural' disasters and, on the basis of these observations, arguing that alternative conceptualizations of security must

integrate questions of hazard vulnerability within their frameworks given the tangible danger such calamities pose to the 'security' of both civil society and the state. This proposal thus largely parallels and dovetails with the arguments of numerous other writers regarding the need to expand political formulations of security in order to address the vast challenges posed by processes of global environmental change (Mathews, 1994; Myers, 1993).

However, a number of other observers have argued against framing environmental issues as threats to security, asserting that conventional political understandings and analytical frameworks of security provide an inappropriate basis for tackling environmental problems and are far too well entrenched to be constructively modified (e.g. Deudney 1991; 1992). This line of argument becomes even more compelling when the environmentally destructive nature of the security practices of states during and after the Cold War is taken into account (Dalby, 1992a).

It is in light of these latter arguments that the present thesis adopts an approach which is in many ways at odds with the argument put forth by Pettiford (1995): it analyzes how the political concept of security, rather than being a potential solution to hazard vulnerability, constitutes a fundamental ideological "root cause" of hazard vulnerability. The purpose of this study is thus not the formulation of an alternative conceptualization of security, but rather the elucidation of how modern understandings of security may be *part of the problem*, rather than part of the solution of disaster risk.

To the degree that past development practices have contributed to increased hazard vulnerability within developing countries and that such practices are

undergirded by the discursive and non-discursive dimensions of the security practices of states, the latter constitutes a key component of the processes underlying the social production of vulnerability. As discussed in Chapter 4, by focusing on the security of the state or the regime in power, conventional state-centric security can serve to inhibit processes of social, political and economic transformation which are often necessary to reduce hazard vulnerability in both the pre-disaster period (via its support of development policies and projects which can exacerbate hazard vulnerability) and the post-disaster period (through, for example, the selective distribution of disaster aid and inhibiting the use of various coping strategies).

The analysis presented in Chapter 5 underscored the ways in which conventional hazard management practices not only indirectly reinforce the security practices of states, but also share many of the same ontological assumptions as the latter. By marginalizing the importance of socio-political and economic processes in the creation of conditions of human vulnerability as well as emphasizing the deployment of sophisticated technological measures in response to potential hazard impacts, conventional approaches to hazard management seek to reduce the impact of natural hazards without addressing the impact of development policies and projects upon the social production of vulnerability. In so doing, the dominant hazards paradigm which underpins mainstream hazard management practices implicitly serves to simply reinforce those socio-political and economic arrangements which contribute to hazard vulnerability among groups who are least able to cope with the impact of natural hazards (Chapter 5).

In light of these observations, it is essential that the currently fashionable intellectual and political trend of framing environmental problems (including so-called “natural disasters”) as “security issues” be subject to increased critical scrutiny. As an alternative to the discourses of environmental security, the potential of discourses of human and environmental rights (Chapter 4) for promoting disaster risk reduction should receive increased political and scholarly attention.

Implications for Research

The arguments summarized above highlight a number of important themes which require further research by scholars working in the fields of hazard and disaster management as well as by those engaged in security studies. The analysis presented in the preceding chapters also suggests a number of potentially rich avenues of inquiry for political geographers involved in research on environmental issues. A brief description of these potential pathways for future research is described below.

For those engaged in research on hazards and disaster, the preceding analysis suggests the need for scholars to critically analyze the manner in which hazard management concerns are integrated within various frameworks of both sustainable development and environmental security. Despite the considerable enthusiasm of a number of experts and organizations (e.g. Munasinghe and Clarke, 1995; OAS, 1990) regarding the integration of hazard management considerations within frameworks and policies of sustainable development, the analysis presented in the final chapter suggests

that this fusion is unlikely to address in an effective manner the social and ecological processes which underlie hazard vulnerability among marginalized groups. In other words, the “greening” of hazard management concerns is far from being straightforward and unproblematic. While the analysis developed in Chapter 5 on this point is preliminary and schematic at best, it does nevertheless illustrate the need for careful consideration and detailed analysis of the consequences of integrating hazard management concerns within differing frameworks and definitions of sustainable development.

However, the principal implication of the arguments presented in the previous chapters is the need for analyses of hazard vulnerability to investigate the impact of the security practices of the state upon the social production of hazard vulnerability. Such an investigation requires, firstly, more detailed analyses of how discourses of security operate to legitimize the use of repressive measures to neutralize political opposition to development policies (which may threaten livelihoods as well as exacerbate vulnerability) and inhibit recovery in the aftermath of disasters. By highlighting the manner in which human and environmental rights (e.g. Johnston, 1995) are often abused in the name of “national security”, such analyses could help underscore the folly of framing environmental matters as “security issues”. Indeed, greater emphasis on discourses of human rights and environmental rights within analyses of hazard vulnerability could contribute to highlighting the politics of security and thus politicizing the crucial questions of *who and what is being secured* by the security practices of states (Dalby, 1997). However, given repeated charges of

ethnocentrism and cultural relativism in regards to Western liberal human rights discourses, other more localized discourses capable of articulating forms of struggle and resistance in this context must be also be examined (Escobar, 1995).

Secondly, detailed analyses of the direct and indirect impacts of the material practices of national security institutions (i.e. the military) upon the social production of hazard vulnerability are also required. This includes the need to examine the impacts of military activities (in both times peace and war) upon the social production of vulnerability. The import of these factors cannot be emphasized enough given that warfare can exacerbate vulnerability to extreme climatic conditions and geological processes in a number of ways including the degradation of the environment (e.g. defoliation), the reduction of access to arable lands through the deployment of land-mines, and exacerbate livelihood insecurity through the extraction of rations or tribute in the context of diffuse, low-intensity conflicts (Blaikie *et al.*, 1994: 43-44).

Although the ways in the material practices of militaries can increase insecurity and hazard vulnerability is widely recognized, the impact of the politics of meaning and the construction of knowledge which underpin security practices is much less so. As a result, it is essential that such analyses examine the discursive as well as non-discursive dimensions of security, for they are inextricably linked. Recent efforts to combine Marxist-inspired political ecology perspectives with poststructuralist strategies of discourse analysis (e.g. Peet and Watts, 1996) are suggestive of the constructive ways in which materialist and discursive forms of scholarly investigation may be combined. Finally, in light of the highly contextual nature of hazard vulnerability, detailed

analyses of the impact of the security practices of states upon hazard vulnerability *in specific contexts* must be undertaken to highlight how the security practices of states can contribute to the social production of hazard vulnerability. It must be emphasized once again that the analysis presented in this study is preliminary at best and its conceptual arguments require further refinement as well as empirical substantiation.

At the other end of the spectrum, the present thesis highlights the need for scholars concerned primarily with the relationship between resource and environmental issues and security policies to consider in a more explicit fashion the matter of hazard vulnerability. Although the merits of attempting to integrate matters of hazard vulnerability within alternative concepts of security is open to debate given the recent history of the concept and the connotations with which it is almost indelibly associated (Weaver, 1995), the increasing tendency among academics and policy makers to discuss environmental issues (including 'natural' disasters) in security terms nevertheless renders the analysis of the security/hazard vulnerability interface a crucial task. Indeed, critical scrutiny of the particular understandings and conceptualizations of security to which hazard and disaster management concerns are framed is essential.

This task is particularly urgent in so far as the potential drawbacks and pitfalls of framing matters of hazard vulnerability in security terms are considerable. For example, framing disaster risk as a threat to (national) security may only serve to reinforce the dominant hazards paradigm among hazard management organizations in so far as it is premised upon similar ontological assumptions as traditional geopolitical specifications of 'security' in which society is threatened by a dangerous external

“other” (Dalby, 1996b; Gilbert, 1995). The consequences of framing ‘natural’ disasters as humanitarian crises which pose a threat to national or international security must also be critically examined. This task is particularly important in the context of developing countries where the deployment of military forces for the purpose of disaster relief operations can be highly problematic (Chapter 4). By and large, the analyses presented in the final two chapters thus suggest that, instead of unreflexively contributing to the “securitization” of hazard and disaster management concerns, it may prove to be more constructive for analyses of the nexus of security and hazard vulnerability to contribute to the “*desecuritization*” (Weaver, 1995) of environmental issues.

As for the analysis of the relationship between environmental scarcities and acute conflict, the observations and arguments presented in the preceding chapters suggest the need for scholars working in this field to scrutinize more critically the factors underlying disaster causation. While so-called “natural disasters” are repeatedly identified as an important cause of environmental refugees (e.g. Lee, 1997; Vlachos, 1997), with all which that entails in terms of the potential for armed conflict, the social processes underlying these disasters are rarely acknowledged (partial exceptions to this tendency are Jacobson, 1988; El-Hinnawi, 1985). The adoption of the traditional “Act of God” perspective regarding such calamities within much of the literature on environmental refugees results in a foreclosure of the possibility of adopting mitigation measures in the face of hazard risk. To the degree that the purpose of investigating the dynamics of environmental refugees is to elucidate policy measures

which may contribute to lessening and responding to such refugee flows (Döös, 1997), the implicit adoption of such an outmoded ontological premise is clearly counter-productive.

Scholars investigating the nexus of environmental scarcities and acute conflict must also necessarily examine how hazard impacts, as well as disaster response measures (or lack thereof), can affect the resource access profile of marginalized groups. While preliminary research suggests that the failure on the part of the state to provide social protection in the form disaster aid can contribute to social unrest and political instability (Olson and Drury, 1997; Pettiford, 1995), analysts of environment and conflict urgently need to examine more closely how the impact of successive and compounding 'natural' disasters can reduce the resource access profile of marginalized groups and thus contribute to environmental scarcities and potential conflict. Particularly crucial here is the need to examine the impact of rapid-onset natural hazards which, unlike more gradual processes of land degradation, can rapidly alter the resource access profile of marginalized groups.

Additionally, such research would benefit by examining the degree to which awareness of vulnerability can contribute social activism and the promotion of social change (Rochford and Blocker, 1991). While the task of tracing causal linkages between environmental scarcities and armed conflict is already fraught with methodological difficulties (Levy, 1995), the inclusion of vulnerability analysis within such investigations is nevertheless essential to achieving a greater understanding of such linkages.

Finally, the arguments presented in the preceding chapters suggest a number of important contributions which political geographers working from a critical geopolitics/ecopolitics perspective can make to current debates regarding hazard vulnerability and disaster. The first of these concerns the spatial ontology which underpins analyses of hazard vulnerability and disaster. While the importance of both geographical and social space in determining hazard risk is recognized within the vulnerability paradigm adopted by some researchers, the maps and problem spaces which are produced and defined within the hegemonic hazards paradigm largely privilege the geographical space of vulnerability in their representations of hazard risk.¹

By ontologically privileging the spatio-temporal distribution of hazards in their explanations of disaster causation, conventional cartographies of hazard risk fail to adequately address the social processes and conditions which contribute to hazard vulnerability. As Hewitt has forcefully argued,

(a)n integral part of the problem (of vulnerability) is that we have hardly begun to define or accept geographies of conditions and cultural contexts on the ground. We need to incorporate realistically spatial perspectives from below...(for) the prevailing development and disaster geographies have not been created by geographers and are only rarely subject to critique by them. Our maps and problem spaces reflect other people's bad geography (Hewitt, 1995a: 127).

¹

That is, of course, if 'vulnerability' is considered not only in terms of actual hazard exposure, but also in terms of the ability of people to anticipate, *cope*, *resist* and *recover* from hazard impacts (Chapter 1).

If one accepts the argument that an understanding of the social processes and conditions which contribute to hazard vulnerability is essential to any comprehensive disaster reduction effort, then the elaboration of cartographies of the social spaces of vulnerability is essential. It is essential for such cartographies to avoid falling into the “territorial trap” (Agnew, 1994) of utilizing states as the principal cartographic unit, for hazard vulnerability is very much context specific. From this perspective, mapping vulnerability necessarily involves the geographical specification of resource flows and, more specifically, the politico-economic processes and social variables (e.g. age, gender, ethnicity, disability) which operate within specific social spaces to determine the vulnerability of particular individuals and social groups to the impact of natural hazards.

Almost all of the “dynamic pressures” which directly contribute to the social production of hazard vulnerability (e.g. land degradation, rapid urbanization, global environmental change) are directly or indirectly linked to, or affected by, policies of economic development and the workings of the global economy (Blaikie *et al.*, 1994: 39-41). Moreover, in light of the influence of foreign development agencies (e.g. CIDA, USAID) and especially financial institutions (e.g. IMF, World Bank) upon the social and economic policies of developing countries as well as the ever-increasing permeability of state boundaries to flows of capital and resources, any attempt to elucidate the “root causes” of hazard vulnerability in specific contexts must take into account the structural arrangements of the global economy.

As Hewitt (1995a) has forcefully argued, the perspective, epistemology and organization arrangements which underpin the activities of the IDNDR manifest a singular lack of reflection concerning the social processes and conditions underlying hazard vulnerability. Disaster reduction is viewed as primarily a scientific and technical task, with emphasis placed upon the transfer of knowledge and technology from developed countries towards developing countries. Disaster reduction efforts are dealt with on a state-by-state basis without any hint of the role of global economic processes in exacerbating vulnerability. The discursive premises upon which the IDNDR is based thus exhibit the same impoverished geographical imagination as the hegemonic discourses of development with which they are intertwined.

From this perspective, the use of the sovereign nation-state as a basic metageographical category² in comparative analyses of hazard vulnerability is thus misleading, and this for two reasons. First, it reinforces the ontological privilege of the spatio-temporal distribution of extreme environmental conditions in explanations of disaster by fostering the illusion of fixed social units: the role of cross-boundary flows of capital and resources in the social production of vulnerability is (indirectly) marginalized. In this sense, the map of global politics acts as a kind of cartographic veil, shrouding the global economic processes which exacerbate vulnerability.

2

The term metageographical categories is defined by Wigen and Lewis as the “spatial structures through which people order their knowledge of the world: the often unconscious frameworks that organize studies of history, sociology, anthropology, economics, political science, or even natural history” (1997: ix).

However, it should be pointed out that “globalization” geographies are not of great use in this context either, for they fail provide a sense in which the global economy contributes to shaping social spaces of vulnerability in specific spatio-temporal contexts. Secondly, by privileging the boundaries of the modern nation-state as the basic problem space of vulnerability, the maps of global politics de-emphasize the differential levels of hazard vulnerability at the sub-state level. However, much the same could be said for other metageographical categories such as Third World and North-South (Hewitt, 1995a: 127-128).

In summary, the metageographical categories which implicitly underpin and organize hazards research (this thesis being no exception!) and management act to constrain the ways in which it is possible to talk about the social production of vulnerability. Thus, as difficult as it may prove to be, it is essential that new maps and problem spaces for discussing and analyzing hazard vulnerability be developed.

In addition to examining the spatial ontology which implicitly underpins and organizes conventional approaches to hazard research and management (Chapter 5), it is essential that the critical ecopolitics perspective examine the conceptualizations of *nature* which underlie these management efforts. Indeed, the vast majority of hazards research, regardless of whether it operates within the framework of the hazards paradigm or vulnerability paradigm, generally take for granted an instrumental, commodified and technocratic understanding of nature in terms of the ‘environment’ (Escobar, 1996).

While instrumental understandings of nature as the 'environment' which contains 'resources' to be utilized by human beings to meet their needs has been widely criticized in discussions of resource management (Westcoat, 1991), the same cannot be said for the field of hazard management (partial exceptions are Marston, 1983; Watts, 1983b; Smith and O'Keefe, 1980). Despite the fact that natural hazards are occasionally described as "negative resources" (Hewitt, 1995a: 117), the critique of instrumental reason which pervades the more radical literature on environmental issues is almost completely absent within hazards research.

All of which suggests the need for researchers to address the possibility of conceptualizing and understanding the dangers posed by the natural environment within a biocentric framework. Can such a framework provide a useful basis for thinking about (potentially harmful) extreme phenomena in nature (i.e. 'hazards') in a non-technocratic or instrumental fashion? If so, how? What are the implications of possible eco-centric readings of the dangers (i.e. earthquake, floods, droughts, epidemics) which the biosphere poses to human societies?

By critically engaging the more radical environmental literature on this matter, the critical ecopolitics perspective may be able to provide crucial insights for hazards researchers and management. In so doing, it may be able to contribute, at least in a small way, to dislodging the dominant technocratic perspective and providing an intellectual space for locally and culturally specific understandings of natural environmental extremes.

Policy Implications

It is, I believe, both intellectually and politically appropriate to conclude this thesis with a brief discussion of the policy implications of the preceding analysis. The discussion below focuses on potential strategies for organizations (particularly, though not exclusively, those based in Canada) engaged in hazard vulnerability reduction efforts within developing countries within both pre-disaster and immediate post-disaster contexts.

In so far as their disaster reduction efforts are concerned, the International Development Research Council (IDRC) has in the past largely emphasized “the establishment of appropriate institutions and information systems...(as well as) the development of appropriate technology in food production and building materials” (Royal Society of Canada/Canadian Academy of Engineering, 1990: 27). The establishment of information systems includes such measures as the development of weather radar for predicting hail storms and flash floods, seismic mapping, hydrological surveys of flood risk, and famine prediction systems (Ibid: 28).

While the development of information systems for hazard prediction is invaluable, analysis of the social production of *differential* vulnerability suggests that an increased understanding of hazardous geophysical and hydrological processes is far from being sufficient to reduce hazard vulnerability among marginalized groups. More specifically, the analysis presented in this thesis underscores the need for organizations such as the IDRC to explicitly emphasize within their disaster reduction efforts the shadow risks faced by such groups (Chapter 4). More specifically, hazard management

concerns must be taken into account when providing financial and technical support for development projects, given the shadow risks which such projects may generate (e.g. migration of peasants towards hazard-prone areas as a result of displacement for the purposes of agricultural or industrial development) (OAS, 1990: 56).

Given that the opportunity to gain support for the implementation of hazard reduction measures is often particularly high in the wake of disastrous incidents, foreign agencies can also promote vulnerability reduction in the post-disaster situations. However, in light of widely observed problems with the distribution and allocation of disaster aid as well as the potentially negative long-term impacts of such aid (Cuny, 1983), the promotion of disaster risk reduction (especially for marginalized groups which are often particularly vulnerable) poses numerous challenges. The analysis presented in the preceding chapters strongly suggests a number of potentially constructive strategies for rethinking the foreign disaster assistance efforts of the Canadian International Development Agency (CIDA) which, through its International Humanitarian Assistance program, is responsible for the management of Canada's provision of emergency relief and humanitarian assistance overseas (Royal Society of Canada/Canadian Academy of Engineering, 1990: 27).

As Albala-Bertrand has pointed out, the disaster relief efforts of the international community (often in the form of food aid or grants and low-interest loans for reconstruction) have in the past far too often resulted in the exacerbation social inequalities and hazard vulnerability by inhibiting constructive social change (1993: 102). If the vulnerability of marginalized groups is to be reduced, it is essential that

international disaster responses focus upon the hidden damages incurred by these groups. Only by effectively addressing these damages and ensuring that vulnerability is not reproduced can disaster risk reduction be achieved. Doing so involves enhancing sensitivity to the various factors impinging upon vulnerability (e.g. age, class, gender) and working in tandem with the endogenous disaster responses of vulnerable communities in order to reduce their exposure, or increase their resiliency to, natural hazards (Albala-Bertrand, 1993: 204; Blaikie *et al.*, 1994: 236; Cuny, 1983: 89-163) by contributing to the creation of sustainable livelihoods.

However, putting such proposals into practice may in some cases require aid donors to circumvent domestic political power structures (Albala-Bertrand, 1993: 204), despite the threat which such a strategy may pose to the sovereignty of developing countries. It is here that, clearly, the goals and methods of international responses to such disasters can directly impinge upon the internal security problematiques of postcolonial states in the 'South'. To the degree that any threat to the legitimacy and power of the state and its élites constitutes (at least from the perspective of these privileged groups) a threat to "security", politicization among disaster survivors as a result of rehabilitation and reconstruction efforts may be labelled as such by the state as in the case of Guatemala (Cuny, 1983: 164-193). From this perspective, the violation of state sovereignty for the purposes of providing effective disaster relief to social groups which the state is either unable or unwilling to help, will clearly be viewed by developing states as a threat to its "security".

However, while the violation of the sovereignty of developing countries in order to assure the provision of disaster aid may reduce the vulnerability of marginalized social groups, utilizing arguments of “humanitarian intervention” to justify such actions raises troubling questions (Whitman, 1994), for such a discourse may only serve to justify “security expansionism” on the part of advanced industrialized states (Adibe, 1994). This quite legitimate concern necessitates a careful analysis of the motivations underlying the responses, or lack thereof, of the international community to disastrous events in order to minimize the arbitrary (i.e. politically motivated) provision of relief assistance (Blaikie *et al.*, 1994: 206-207).

One final theme which is of crucial importance here is the role local grassroots groups and NGOs (including those involved in environment, development and human rights issues) in promoting hazard vulnerability reduction. As Blaikie *et al.* have forcefully argued, organizations other than the administrative apparatuses of the state may prove to be far more effective in reducing hazard vulnerability and thus enhancing the safety of individuals and social groups currently exposed to the impact of natural hazards. This argument is particular compelling in light of Wisner’s (1993) observation that the bulk of the hazard and disaster management literatures take for granted the *benevolence* of the state by assuming that the safety and well-being of its citizens is invariably deemed a central political priority. This crucial observation underscores the key argument which underpins the present thesis: that framing questions of hazard and disaster management with state-centric definitions of security in

no way ensures a safer future for those most vulnerable to the impact of natural hazards. As Kenneth Hewitt has pointed out

(t)he conceptual or research link...(in this context) seems to depend upon whether you think the national security issues of disasters can or should be dealt with by the same organisations charged with bringing relief to the persons, places and activities they harm. Can/should the two be clearly distinguished and treated separately? What are the chances that an organization that an organization (i.e. national security institutions) set up for one purpose, will behave and have goals substantially different, if given other tasks? Again, though it is often missing in the mainstream media and professional literatures, there is lots of evidence to suggest to suggest that survivors, local self-help and NGOs are more effective or timely in saving lives and bringing relief to victims, than centrally organised state and international agencies. The latter can facilitate or frustrate that, but rarely have the local knowledge to replace it (Hewitt, 1997).

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