

SOCIAL SYSTEMS, ECOLOGICAL NETWORKS AND DISASTERS

Toward a socio-political ecology of disasters

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For residents of southern sections of the Miami metropolitan area, the morning of 24 August 1992 represented a dramatic discontinuity in the world as they knew it. At least temporarily, there were no daily routines or normal lives. Everyday activities, such as getting a drink of water, fixing a meal, or taking a bath, became daunting tasks. The information upon which the routines of daily life had been structured was virtually useless because the “stuff” needed to put it to use was no longer available – no electricity, water, gas, telephone, refrigerator, stove, bed, bathtub, room, or for many, even house. There were no stores or businesses to buy food, supplies, or services. Schools, hospitals, recreation facilities, entire neighborhoods, were virtually gone. The world was now full of uncertainty; new information was needed – where to find things, how to fix things, and how to get things done.

As the hours turned to days, the level of uncertainty worsened for many. There seemed to be no organized activity dealing with the crisis. The pervasive level of frustration was captured by the questions, the choir of questions, heard at every turn. Where do we go for help? Where will we live? How can I protect what’s left? Will my insurance cover this? How long will it take to rebuild? Will life ever return to normal? Who’s in charge? Does anyone care?

People wanted to be able to point to one place, one person, or one organization for simple, straightforward answers. What became increasingly clear was that no single person or organization was in charge, and there would be no simple solutions. Eventually, a multitude of suggestions and ideas emerged, some of which worked while others did not. Some were novel solutions, others were “old hat.” Some resulted in new ways of thinking about communities, enhanced mitigation, and increased community involvement, while others reduced involvement, created dependency, and increased future vulnerability. For parts of the community, typically areas lacking local resources, few or no solutions were even proffered.

In this book we focus on some of the important questions raised and examine some of the solutions offered as families, households, businesses, and other community groups and organizations prepared for the impending storm, made evacuation decisions, dealt with the immediate crisis, and negotiated the lengthy restoration and recovery processes. We explore the discourse associated with a mosaic of solutions, seeking to understand why some paths were taken over others and examining some of the consequences. And, we ask why some community issues were never raised, or received scant attention, at least from those with the power and resources to address them.

In a sense, we, too, were searching for what could not be found – for there were no simple solutions and there are no simple findings. And yet, some themes clearly emerged out of Hurricane Andrew's chaos. They emerged, not from the storm itself, but rather from the complexity of preexisting community structures. While disaster agents, such as hurricanes, may appear to be simple physical events, in order to understand their impact, including how communities respond and are ultimately affected, we must understand the nature of community itself.

THE NATURE OF HUMAN COMMUNITIES

When contemplating what is meant by the term community, ideas such as “a common sense of identity,” feelings of affinity and cooperation come to mind, particularly in connection with our romantic notion of small rural community. Let the focus shift to life in today's cities, however, and we are more likely to think of crime, conflict, competition, and exploitation. These seemingly antithetical positions are evident, not only in everyday discourse, but also in the social science literature. The position adopted in our work is that any community, regardless of its size, location, or level of development, should be conceptualized as an *ecological network* of social systems. This network, along with the bio-physical characteristics of the more or less identifiable physical space it occupies, form an *ecological field* (Bates and Pelanda 1994).

When considering network process and operation, we adopt a *socio-political ecology* perspective. This position draws upon emerging currents in the study of disasters calling for a broader ecological approach, and goes beyond examining the interaction between social systems and their bio-physical environments, focusing on interactions among social systems themselves (for example, Hewitt 1983; Faupel 1985; Faupel 1987; Pelanda 1989; Bates 1993; Bates and Pelanda 1994). The notion of studying the socio-political ecology surrounding an event is consistent with increased interest in political economy and critical perspectives, including the analysis of minority, gender, and inequality issues at all phases of disaster research, from evacuation through mitigation (Perry and Mushkatel 1986; Bolin and Bolton 1986; Scanlon 1988; Tierney 1989; Phillips 1993b; Morrow and Enarson 1994; Morrow and Enarson 1996). All these properties reflect an awareness of conflict and competition and demand attention to the

complexity, heterogeneity, inequality, and contingency found in human communities if we are to understand social processes and structures, including those associated with disasters.

COMMUNITY AS AN ECOLOGICAL NETWORK

Ecological approaches have a long history in the study of human communities (Park 1936; Duncan 1961; Duncan 1964; Odum 1971) and interest has risen considerably since the mid-1970s (Catton and Dunlap 1978a; Catton and Dunlap 1978b; Dunlap and Catton 1979; Boulding 1981; Hannan and Freeman 1989; Laska 1993). This trend is evident in recent disaster research and theory suggesting the utility of central concepts, such as an *ecological complex* (Faupel 1985 and 1987). While bemoaning an overemphasis on the interaction between human systems and their environment, this work suggests it is important to examine the interaction among cultural and organizational components of human communities themselves. The position we take extends this theme, directly addressing the nature of human communities and paying particular attention to conflict and competition within them.

We begin by rejecting the notion of community as a single, bounded, autonomous social system and suggest that it be conceptualized instead as an ecological network of interacting social systems.¹ This demands that an ecological framework be applied, not only to the relationship between a social system and its bio-physical environment, but also to the relationships among the various social units comprising the network itself (Pelanda 1989; Hannan and Freeman 1989; Peacock 1991; Bates 1993; Bates and Pelanda 1994). Groups and organizations which are semi-autonomous self-referential social systems (Luhmann 1990a and 1990b) are linked together through relationships and member-sharing to form an ecological network of contingent relationships.

The critical factor in conceptualizing community as an ecological network stems from the nature of the relationships among the constituent systems (Bates 1993; Bates and Pelanda 1994). These linkages are not bonded in the sense of there being rules (norms and roles) designating particular linkages, as is often the case within organizations. For example, most households are not linked in a particularistic fashion to specific retail businesses (such as particular grocery, hardware, or drug stores). Whether a household is linked to a particular business depends on factors like convenience, price, quality, information, and history as determinants in this inherently stochastic process (Bateson 1972).

When this idea is expanded to consider the range of interactions among the multitude of units making up a community, it becomes clear that the aggregation cannot be thought of as a single autonomous social organization. The units are not bound by systemic, bonded, unit-specific linkages implying regulation, coordination, and central control. Rather, the groups and organizations within a community are linked by sets of contingency linkages among which information, members, and resources flow. Any coordination or control

is not likely to be the result of a centralized authority structure, but rather to have emerged out of the interplay of mutual contingencies, competing interests, and coalitions exercised through a variety of structural linkages (Bates and Harvey 1975; Peacock 1991). Indeed, coordination and conflict resolution become critical to network processes.

Rejecting the idea of community as a single system does not dispense with the notions of dependence and interdependence. An ecological network is structured by a division of labor in which social units occupy niches in a web of interdependencies (Bates 1993: 250). Units making up a social network may be highly specialized, producing few of the resources needed to carry out their own activities. As a result, they will be dependent on categories or sets of other systems. Thus, dependency and interdependency are fundamental characteristics of a community and have important implications for power, influence, and survival within the ecological network.

While groups and organizations are conceptualized as self-referential systems having autonomous authority structures, this does not imply equality. Some exert far greater influence than others. Power and resource distribution are critical determinants of network operations and system survival. The outcome of competition and conflict over the control of resources will determine relationship patterns, as well as the long-run survival of specific social units within the network. Furthermore, these factors will, to a large extent, determine the interaction between the social network and its larger ecological field. For example, from a mitigation viewpoint, business and development concerns overly influence land use policy and building patterns (Logan and Molotch 1987). In policy decisions, profits, not field sustainability nor the ability of the built environment to withstand potentially hazardous environmental impacts, typically take precedence.

The historical development of government can be viewed as an evolution of systems coordinating the relationships among the various groups and organizations within ecological networks (Braudel 1981; Braudel 1982; Braudel 1984; Lenski and Lenski 1990). The degree of government control, in part, determines the extent to which a community approximates a single system. Communities in Western democracies tend to be loosely fitting networks, especially when compared to the more centrally planned communities and societies of totalitarian regimes. In addition to their coordinating activities, governmental organizations serve as conflict resolution structures (Bates and Bacon 1972). Competing interests resolve conflicts in a more or less controlled fashion through legislatures and courts, although access to and success in these structures certainly varies. The legislative process sets the rules for exchange and declares certain exchanges as non-contingent and outside the market (Bates 1974). Executive branches administer non-market service programs and attempt to regulate, coordinate, and police activities within the network. Taken as a whole, government represents multiple organizations and agencies, themselves constituting a sub-network (Bates 1993). Competition and conflict over jurisdictional issues among

national, local, and state governments adds further complexity to local community networks. Ironically, conflict, competition, and lack of coordination are inherent among these very organizations and agencies expected to coordinate and regulate a community's ecological network.

A host of non-governmental coordinating bodies exist in the interstices between community groups and organizations (Bates and Harvey 1975). Business coalitions, better business bureaus, unions, and intergovernmental committees, as examples, coordinate actions and relationships throughout the network and influence future events, set prices, control policies, and selectively stimulate or thwart activities related to their collective interests. They often link government and business interests, thereby insuring that regulations, policies, and agencies' actions do not negatively impact business concerns. Some of these groups, such as the interlocking directorates and informal coalitions of power elites, fall outside public knowledge, either by design or due to network complexity. Certain organizations come to dominate particular niches, exerting inordinate control over network activities. While these factors insure that social entities are not playing on equal fields, they do lessen the contingencies and uncertainties of network operation.

As a perspective then, socio-political ecology extends an ecological perspective to the very heart of what Park (1936) referred to as the organizational component of the ecological complex – rejecting the notion of community as a single autonomous social system. Rather, a community is an ecological network of groups and organizations linked through divisions of labor based on contingent relationships. Competition and conflict are inherent, hence mechanisms of conflict resolution and coordination are crucial to the long-term functioning of the network. Finally, differential access to network resources is critical for understanding the survival and reproduction of its social units. The implications of this perspective, particularly these latter points, will become clear as we turn our attention to a discussion of disaster and recovery, focusing on the processes of household recovery in the United States.

DISASTER AND RECOVERY

A major natural disaster, in the sociological sense, can be thought of as a failure of the social systems constituting a community to adapt to an environmental event (Pelanda 1982; Bates 1982; Britton 1986; Kreps 1989; Pelanda 1989). This failure is not simply the result of a high-impact natural phenomenon, such as a hurricane or earthquake. It should also be viewed as the failure to develop and distribute, among other things, technology in the form of housing and community infrastructure capable of withstanding such an event. The disruption of networks of social interaction and the inability of social actors to operate on the basis of normative information are what define the disaster as a social event. Information relevant for normal behavioral patterns now lacks utility because stores, buildings, transportation, and energy systems are typically unavailable.

Restoration of these facilities is usually beyond a household's limited capacities and is dependent on parallel restoration processes occurring among units throughout the network. Community recovery from this perspective can be thought of as a process in which the groups and organizations making up the community attempt to re-establish social networks to carry out the routines of daily life. In terms of linkages among the units, recovery demands that the contingencies for obtaining the necessary knowledge, goods, and services within the social network be brought within acceptable parameters.

A critical component of recovery is the reaccumulation of the capital or physical infrastructure used by the various social units making up the network. For example, households use many items such as stoves, refrigerators, and washing machines to carry out daily routines. Thus, an important measurement of household recovery is the reaccumulation of these material items, thereby allowing routine patterns to re-emerge (Bates and Peacock 1993). Household recovery is a dynamic process where households, as interdependent social units, interact with their environments to re-establish their living conditions and patterns of interaction. While cooperation certainly exists, recovery typically entails sets of negotiations that can best be characterized as competitive, potentially conflict-ridden, and stressful. Many of the network's social units occupy similar niches, placing them in competition for scarce resources and services. This is particularly the case with households which, as end consumers, must enter into a complex, competitive ecological network *en masse* in order to negotiate their own recovery. Many factors related to community complexity have consequences for the outcome of this recovery process, such as its level of economic development, size, division of labor, and political system (Hoover and Bates 1985; Peacock, Killian and Bates 1987).

A single recovery pattern rarely emerges from the complexity of processes and factors influencing long-term recovery. The outcome for any particular household is contingent upon a host of factors and is likely to be highly uneven across households. The results may include improved living conditions, enhanced ability to withstand future disasters, even economic improvement and increased development (Senior 1970; Bates, Farrell and Glittenberg 1979; Bates and Killian 1981; Catarinussi, Pelanda and Moretti 1981; Abril-Ojeda 1982; Geipel 1982). On the other hand, decline in socioeconomic status, failure to regain predisaster living conditions, and increased vulnerability may occur (Clifford 1956; Bolin 1982; Bolin and Bolton 1983; Peacock, Killian and Bates 1987; Bates and Peacock 1987; Bates 1982).

The socio-political ecology perspective is concerned with how social structures shape the dynamics of household recovery, resulting in these disparate outcomes. Relevant factors include household attributes and access to financial, medical, material, and informational resources. The policies and programs of governmental agencies, the response of private organizations and businesses (often captured under the rubric of the market's response), and the role of non-profit non-governmental agencies and local development agencies play

significant roles in determining and altering the resources available for household recovery (Mileti, Drabek and Haas 1975; Bates 1982; Bolin 1982; Kreps 1984; Drabek 1986; Bates and Peacock 1987; Bates and Peacock 1989b). Thus, varying patterns of recovery or non-recovery from a disaster emerge as individual households with differing attributes negotiate the contingencies of their unique ecological network in order to mobilize vital resources and services.

DISASTER RECOVERY IN THE UNITED STATES

Unlike some Western industrialized nations where the government takes a direct role in planning, financing, and implementing post-disaster reconstruction, the United States relies heavily on private insurance payments, supplemented by government-sponsored low interest loans and grants, with non-profit voluntary agencies often filling in some of the gaps. It is essentially a market-based recovery approach. In high-impact disasters, local and regional resources are insufficient and must be supplemented from outside the community. These supra-local resources are generally filtered through existing organizations (for example financial institutions, insurance companies, governmental and non-governmental agencies). Disaster-related federal and state assistance programs generally operate under constrained mandates which set qualification standards and, until very recently, have narrowly defined restoration goals. In the final analysis, it is up to individual households to negotiate the relevant processes to acquire the necessary funds – whether insurance settlements, government or private loans or grants, or their own resources – to use in the market place to facilitate their own recovery.

It is a general, though not fully tested, contention that a market-based recovery mode is inherently conservative in nature. Simple restoration, rather than equity and development, is the intended outcome (Bolin 1982; Bates and Peacock 1987). Preimpact failures of market and regulatory mechanisms, as well as pre-existing social inequities, find full play during recovery and reconstruction. For example, engineers have noted that disaster damage is, to a large extent, preventable if appropriate building technologies, in terms of designs, materials, and construction techniques, are utilized. However, in today's mass housing markets, construction techniques, as well as government regulatory mechanisms, such as building codes and inspections, often fail to insure adequate and appropriate housing. These matters typically receive a great deal of attention immediately following a disaster, but the urgency of citizens to rebuild, coupled with political pressure from developers and builders, tend to thwart reform. As a result, many pre-impact failures are reincorporated into the rebuilt environment.

Determinants of household attainment and accumulation, such as socio-economic status and household composition, take on added significance after a disaster (Cochrane 1975; Haas, Kates, and Bowden 1977; Bolin 1982; Drabek 1986; Peacock, Killian and Bates 1987; Bates and Peacock 1993). Not only do

high-income households have more personal reserves to draw upon, they may also receive more federal disaster assistance (Bolin 1982). Household composition is important because resources and needs vary according to number of adults, particularly wage-earners, as well as the gender and age distribution. Its stage in the family life cycle can also affect economic, as well as emotional, family recovery (Bolin and Trainer 1978; Bolin 1982). The extent to which households are connected to the community, in terms of family, ethnic, and other social networks, is an important factor influencing disaster response and outcome (Quarantelli 1960; Hill and Hansen 1962; Drabek and Boggs 1968; Drabek *et al.* 1975; Drabek and Key 1976; Drabek and Key 1982; Bolin 1982; Perry and Mushkatel 1986; Portes and Sensenbrenner 1993).

Race and ethnicity can have important recovery consequences, a factor requiring increased consideration given the changing population demographics of the United States. Minority households tend to have significantly lower incomes (O'Hare 1992). Discrimination and cultural factors can further limit their access to important public and private resources, such as loans and adequate insurance settlements. Market-based recovery policies tend to magnify the consequences of these conditions, placing minority households at much greater risk of failing to recover. And yet, local community situations may modify these findings. As we discuss in the next chapter, the case of Cuban Americans in South Florida represents a situation where the creation of a comprehensive sub-network has enabled a national minority largely to avoid disadvantaged status. Specifically, the establishment of an enclave economy has allowed Cubans to move quickly into the political and economic hierarchy of the region, if not the nation (Wilson and Portes 1980; Portes and Bach 1985; Pérez 1992; Portes and Stepick 1993). As a result, Cubans tend to enjoy greater access to resources than do most minority groups (Grenier and Stepick 1992). One of the factors we will subsequently address is the extent to which this enclave may have facilitated the recovery of Cuban households after Hurricane Andrew.

SOCIO-POLITICAL ECOLOGY AND DISASTER RESEARCH

Applying an ecological perspective to the study of disaster brings to the forefront socio-political issues such as the extent to which social inequality, heterogeneity and complexity, competition and conflict, and coordination exist within the network of social systems. The following sections discuss and provide examples of ways in which these factors influence disaster response and outcomes, advocating their emphasis in future disaster research. This discussion is not meant to be exhaustive and may well bring to mind additional issues associated with the socio-political ecology of a disaster setting. Our intent is to illustrate the types of issues arising from this conceptual framework, many of which are addressed in our work.

Social inequality

It is important that we continue to study the effects of political and socio-economic inequality – whether associated with race, gender, age, class, or some other attribute – on all phases of disaster processes. The consequences of various types of social differences for the modes and results of recovery have begun to receive attention, but many related issues have yet to be fully identified, conceptualized, and studied. This is particularly the case with the role and consequences of gender in disaster events, from household preparation and evacuation to long-term recovery efforts (Morrow and Enarson 1994). Due to the paucity of gender-related work, in spite of its theoretical significance in all levels of social phenomenon, gender is a central theme in our work. Enarson and Morrow (Chapter 7) offer a gendered analysis of disaster focusing on women's experiences after Hurricane Andrew. They are particularly concerned with ways in which gender intersects with race and class to place women and their households at special risk. Morrow then highlights women's perspectives in an analysis of overall family response (Chapter 8). She also examines ways in which internal characteristics of families and households influenced the effects and results of this experience.

South Florida's population provided unique opportunities for examining the influence of diversity beyond the household as well. Yelvington addresses some subtle issues of race and ethnic relations as households living in temporary tent cities struggled to cope with the initial aftermath (Chapter 6). Gladwin and Peacock address racial differences in preparation and evacuation decisions (Chapter 4). While recent research suggests few, if any, consequences, their unique analyses and findings suggest that normal modeling of evacuation decisions obscures many of the differences. The consequences of racial and ethnic inequality in access to insurance are addressed by Peacock and Girard, thereby assessing some of the consequences of market-based recovery policies (Chapter 9). Girard and Peacock focus on an issue that has received scant attention – the demographics of disaster – while assessing ethnic and racial differences in post-disaster population movement (Chapter 10). And Dash, Peacock and Morrow examine the restoration progress of a predominantly Black community in the hardest hit part of South Dade (Chapter 11).

Inequality issues associated with political participation, representation, and power in populations impacted by disasters have not received the attention they warrant. However, over the last two decades events in Nicaragua, Guatemala, and Mexico have begun to sensitize the field to the linkage between disaster and political change. Following the 1976 earthquake, recovery and development programs in Guatemala set into motion political change that greatly improved many communities – until the military's "scorched earth" policy brought these reforms to a bloody and brutal end (Bates and Peacock 1987; Peacock 1994). Similarly, the Mexico City earthquake of 1986 became a visible symbol of the problems of Mexico's ruling political party (PRI) and became a watershed event

in the emergence of credible grass-roots opposition movements (Castanos-Lomnitz 1993; Poniatowska 1995). Research conducted in the West sometimes fails to consider the importance of these factors by assuming democracy and political participation to be the rule.

Hurricane Andrew struck less than three months before the 1992 presidential elections. It has been suggested that the slowness of the initial federal response made President Bush appear ineffectual, and hurt his re-election bid. A key FEMA administrator recounted how, subsequent to the President's visit to devastated South Dade, they received orders to quickly get out as much assistance money as possible. Yet he questioned the wisdom of distributing Individual and Family Grants before stores had reopened in the community where the replacement household belongings could be purchased. In another example, during the first few months after the storm, most predominately Black neighborhoods and unincorporated areas received scant attention from authorities. It so happened that the November 1992 election was the first to be held after Florida electoral reform had resulted in redrawn district lines insuring better minority representation at all levels of government (Morrow and Peacock 1993). After several African-American officials were subsequently elected at local, state, and federal levels, minority issues gained increased attention, as illustrated by the appointment of several special governmental commissions and officials to oversee the recovery of neglected areas. It is difficult to know the extent to which population changes prompted by Hurricane Andrew played a role in the elections, but the improved minority representation no doubt contributed to a re-adjustment of governmental and private sector response.

The extraordinary influence exerted by powerful economic interests on government policy, land use patterns, and construction has important implications for disaster research. As previously discussed, pro-development interests can dramatically alter attempts to regulate development, financial decisions, and building practices (Logan and Molotch 1987). One of the most insightful examinations of this influence in legislative and regulatory processes was undertaken following Hurricane Andrew, not by social scientists, but by reporters from the local newspaper (*Miami Herald* 1992n, 20 December). A series of articles documented how the close relationship among Miami's builders/developers, elected county officials, Zoning and Building Code Board members, and building inspectors over the years was accompanied by a steady reduction in building codes, the acceptance of new building materials and technologies inappropriate for South Florida, and laxity in inspections and enforcement. While researchers have long recognized the critical effects of material culture – in the form of the infrastructure and built environment – on disaster damage, Hurricane Andrew reminded us that to understand these mitigation failures we must appreciate the socio-political ecology that led to their production (cf. Scanlon 1988; Tierney 1989; Peacock 1996).

Heterogeneity and complexity

The complexity of a community's network has consequences for the level and nature of disaster response. No community is able to mobilize sufficient internal resources to respond to a major event, but smaller, less developed areas will be especially in need of supra-local resources. To meet emergency and relief needs, governmental and non-governmental agencies typically flock into the area, bringing workers and supplies. Rebuilding usually requires extensive resources, including not just labor, but new contractors, building suppliers, wholesalers, inspectors, and financial institutions (Barton 1970; Dynes 1974; Wenger 1978; Peacock and Bates 1982). Communities often undergo, at least in the short term, modifications in their scale, complexity, and heterogeneity (Mileti, Haas and Gillespie 1977; Hoover and Bates 1985; Morrow 1992).

A number of past studies have examined community impact, including aggregate change in the number and types of businesses (cf. Friesema *et al.* 1979; Wright *et al.* 1979). However, a host of issues have yet to be fully examined, including a comparison of survival rates and strategies of local, national, and even international businesses, alterations in the nature of employment, and modifications in the size and scale of certain economic sectors. Also, changes in the characteristics and implications of community divisions of labor require further examination. For example, the introduction of new organizations and linkages between a community and its social environment introduces new areas of potential conflict and competition (Faupel 1985 and 1987) and may alter a community's power structure. We report on a short-term analysis undertaken by Dash *et al.* (Chapter 11).

An analysis of the effects of disasters on ethnic populations and businesses represents another fruitful line of research. Disasters do not impact sub-populations equally, yet we have only recently begun to examine disaster-related population shifts (Morrow-Jones and Morrow-Jones 1991). While early research focused on differential mortality rates of ethnic/racial groups, the overall consequences for population composition were not examined (Bates *et al.* 1963). Greater population mobility, more dense inhabitation of vulnerable areas, as well as changing ethnic composition, increase the likelihood that disasters will result in ethnic/racial demographic shifts. For example, the implications of increased ability to flee a disaster area as a household recovery option is virtually unstudied. In this book, Girard and Peacock examine ethnic/racial differentials in population movement after Hurricane Andrew (Chapter 10).

Recent Census figures reveal major changes in the heterogeneity of American living arrangements. Households are increasingly composed of non-family residents, single persons, or single parents. The proportion consisting of a married couple (with or without children) decreased from 75 per cent in 1960 to 55 per cent in 1991 (Ahlburg and DeVita 1992). Single adults living alone now account for 25 per cent of all households. About 12 per cent of African-American and 6 per cent of Hispanic children currently live in their

grandparents' homes, often with one or both parents. Increasing numbers of the elderly, especially women, live independently. At least 10 per cent of American mothers are raising their children alone (O'Hare 1992) and they are often minority mothers whose economic status is marginal. For example, about one-third of all African-American families consist of a mother and her children with an average annual income less than one-third that of dual-earner families (O'Hare 1992). Not only has household structure changed, but family roles reflect the changing responsibilities of women. The participation of wives and mothers in the workplace has dramatically increased, making the dual-worker family dominant (Ahlburg and DeVita 1992). While this has been accompanied by a slight increase in the domestic involvement of men, women continue to be responsible for most domestic and caregiving tasks (Goldscheider and Waite 1991), often causing serious role overload.

These changing dynamics of ethnicity, household structure, and gender roles impact on the strategies and resources of households in pre- and post-disaster response. Policies need to take into account cultural and structural differences in household resources and patterns of decision making, including the expanded role of women. To guide policymakers, more disaster research should focus on populations reflecting these national trends, particularly since this diversity is especially evident in regions, such as California and Florida, with a high probability of experiencing major natural disasters. Our focus on population diversity is reflected in connection with a variety of topics, including evacuation, emergency housing, women's experiences, family response, and population movements.

The social ecology of communities is modified after a disaster as new groups emerge or move into the area and new linkages among groups are established. In recent decades the literature on emergent social groups and organizations has produced a number of important insights into issues related to future mitigation and recovery (Turner and Killian 1972; Forest 1978; Neal 1984). The ecological network's complexity is altered, particularly among its sub-networks of voluntary and service organizations. Their survival rates and long-term roles in political action and resource mobilization represent important areas for future research. Many of these new organizations and sub-networks, such as the Unmet Needs Committee in South Dade, play important roles in coordinating activities within the community's ecological network.

Coordination

When examining coordination issues, the network interactions of all forms of organizational coordinating structures – not just governmental ones – must be considered. The relations among organizations playing critical roles in disaster preparedness and emergency response are only now beginning to be studied. For example, shifts in interactions as organizations move from an emergency mode to long-term recovery activities call for new roles and demand a new set of sub-

networks to oversee coordination; researchers have begun to describe and analyze these shifting network structures (Gillespie *et al.* 1992; Gillespie and Colignon 1993). Averch and Dluhy discuss the particular crises that occurred in Dade County as activities shifted from warning and evacuation to emergency/restoration (Chapter 5). While addressing leadership problems and key actors involved in this transition, underlying their discussion are the structural issues of inter-organization coordination in times of crisis.

In the United States a host of new private, non-profit organizations have been created with the blessing and even at the behest of government to coordinate rebuilding and recovery efforts. Examples are organizations such as Rebuild LA, established following the 1991 Los Angeles riots, and Florida's We Will Rebuild (WWR), which was set into motion immediately following Hurricane Andrew. These organizations coordinated recovery efforts, not simply by pooling and channeling private funds and public monies to recovery and reconstruction activities, but also because their membership was drawn from the highest echelons of local and national businesses. As such, they wielded extraordinary direct and indirect influence through funding rebuilding efforts, shaping policy and coordinating the activities of key businesses, financial institutions, and government.

WWR was formed following Hurricane Andrew at the request of President Bush. It was headed, administered, and staffed by some of Miami's most influential business leaders, resulting in an under-representation of women and minorities. Soon after its formation, WWR came under fire for its perceived over-focus on long-term business and economic concerns to the neglect of immediate civic needs, including restoring community services to South Dade's families. Protests were heard from various minority groups in the community, including a diverse coalition of community women's organizations which emerged to draw attention to neglected issues of women and families, such as the immediate need for childcare and recreational facilities. While it appears that these umbrella coordinating groups are becoming the national model in communities faced with major disasters, many questions remain unanswered. What is the appropriate role for these powerful organizations? Who do they represent? Should they have control over public, as well as private, funds? What has been their effectiveness in stimulating recovery? Which segments of the community have benefited the most? Issues related to interlocking directorates, the channeling and expenditures of funds, and how membership shapes perceptions of what is determined to be a community need should be explored. Some of these issues are briefly addressed by Enarson and Morrow (Chapter 7), by Dash *et al.* (Chapter 11), and in the final chapter by Morrow and Peacock.

Government agencies are expected to play critical roles in coordinating disaster response. Yet, as discussed earlier, local, national, and regional governments are, to varying degrees, in competition and conflict. Hence, mechanisms for intergovernmental coordination are critical. We address some of the difficulties faced by a small local government, Florida City, in competing for

post-disaster resources (Chapter 11). The unique leadership roles needed to support intergovernmental coordination during the emergency response are a major focus of the work of Averch and Dluhy (Chapter 5).

An additional issue concerns the coordination between the government and non-profit organizations. Government agencies tend to be oriented toward dealing with the for-profit sector and, as a result, may fail to facilitate the licensing, regulatory mechanisms, and support for the voluntary groups which have become such an important part of community rebuilding efforts. In Dade County, a host of these organizations, most with religious affiliation, launched extensive programs to help poor households repair and rebuild. Their work was severely impacted, particularly in the early months after Andrew, by the failure of local and state government to recognize their importance and develop policies to facilitate their work. These voluntary groups typically lack political influence, and at each new disaster site are faced with public agencies unfamiliar with their needs. Research is needed on how the work of non-profit organizations active after disasters can be better coordinated and facilitated.

In the United States, coordination within community networks is largely a function of the market, especially as it relates to housing and insurance – two critically important issues in disaster mitigation and recovery. Much of the work which focuses upon the problems with insurance related to housing would easily justify an indictment of the market system as a mechanism for recovery (cf. Squires and Velez 1987). Additional justification stems from the fact that extensive levels of damage can often be traced to inadequacies in the construction materials and techniques used by profit-oriented businesses. However, when comparing impacted communities in the United States with those in centrally planned formal economies, such as the former USSR, our condemnation must be tempered by their failure to provide adequate housing, mitigate against disaster agents, and self-regulate with respect to environmental impact and civil rights policies. Throughout our work, however, we discuss policy-related changes that address more adequate market response to disaster issues.

Competition and its mitigation

In a “free market” system, competition is often lauded as being the driving force behind continued economic development and innovation. However, it is actually *constrained competition*, in which open and violent conflict is kept in check, that is important. In the crisis situation following major natural disasters, unconstrained competition can have a dramatic negative impact on community recovery. In the aftermath of Hurricane Andrew, thousands of poor households lacked sufficient resources to procure for-profit contractors, builders, or service providers. Recognizing the desperate situation, a host of religious and secular non-profit organizations sought to provide reconstruction and repair services. However, as mentioned above, their efforts were initially thwarted by Dade County regulations, which made it very difficult for voluntary construction

workers and contractors to work in the area. For-profit contractors and developers saw non-profit groups as competitors and exerted political pressure to block regulatory reforms intended to facilitate the licensing of temporary voluntary labor. As a result, precious time elapsed before sufficient public pressure forced new legislation to support the voluntary agencies. A clearer understanding of these issues, which occur over and over again when non-profits enter new communities, is needed and policies developed to address the problem.

Competition among local non-profit and national voluntary organizations can also be a major impediment to the effective use of limited human and economic resources. The development of formal and informal coordinating groups can lessen conflict, negotiate competition, and facilitate coordination. Following Hurricane Andrew there were a host of attempts to coordinate and reduce competition among these groups, but only a few survived and proved to be truly effective, including a VOLAG which later evolved into an active VOAD (Voluntary Organizations Active in Disasters), an Unmet Needs Committee, and several interfaith coalitions, such as ICARE. Analysis of their goals, organizational structures, effectiveness, internal dynamics, and external relationships is critical to the development of effective mechanisms to lessen competition among them and to better facilitate the use of their vital human and material resources.

Conflict and competition are also evident among governmental agencies, among for-profit organizations, and among the many groups and population aggregates, such as ethnic groups, existing within communities. This can result in delays, blockages, shortages, and waste of limited resources within the field during critical recovery periods. However, disaster researchers must also examine the consequences of competition during all phases of disaster processes. Work by Dynes (1974), Wenger (1978), and Faupel (1987) suggests fruitful lines of analysis. We will address many of these issues in the final chapter of this book.

AN APPLIED FOCUS

This discussion is not meant to be exhaustive, but to suggest issues that flow from a socio-political ecology approach. Community processes occur within exchange networks of contingent relations among the social systems, organized in divisions of labor, constituting the ecological field. Research generated from this perspective targets the flow of people, information, and resources within the network and the competitive environment which occurs as social units with varying amounts of power seek access. Hence, issues of coordination, competition, inequality, changes in patterns of interaction, and field heterogeneity become important dimensions of investigation.

It is our hope that by explicitly developing the unique contribution which disaster research can bring to bear on this theoretical perspective we will make

important contributions toward a more comprehensive ecological framework in the social sciences. More importantly, the work of disaster researchers, whether involved in planning, evacuation, mitigation, or recovery, provides an opportunity to contribute to a reformation of the structural perspectives still implicit in much of sociological theory. This is possible not only because we, like other social scientists, are interested in discussing the problems and failures of social systems and networks, but, just as importantly, because the applied focus of our research demands critical evaluation of the effectiveness of these structures. Through further development of a socio-political ecology perspective, it is our hope to stimulate progress toward what Quarantelli (1987) suggested must be our fundamental interest – making communities, and ultimately society, better able to mitigate against and cope with disasters.

NOTES

- 1 This rejection is based on advances in systems perspectives and neo-functionalism (Alexander and Colomy 1990), constructivism and self-referential systems theory (von Glaserfeld 1984; Maturana and Varela 1980), and work by Pelanda (1982 and 1989) and Bates (1993) at the Laboratory for Socio-political Ecology (cf. Bates and Pelanda 1994). In particular we have drawn heavily from Bates' (1993) critique of the concept of system and resulting reformulation of ecological field theory (cf. Bates and Peacock 1989a).