1 Policy, Politics, and Natural Hazards: An Overview of Themes and Findings

The environmental hazards to which human civilization is prey are among the most awesome forces to be observed on the surface of the planet. Slight movements of the earth's crust create earthquakes so powerful tha large structures are toppled like so many dominoes. Tornadoes, of w there are perhaps 1000 per year in the United States, shatter houses consummate ease and lift cars, mobile homes, cattle, and other objects mile into the air and scatter them haphazardly over the landscape. Hurricanes drive the sea itself hundreds of yards onto the land, sweeping away beaches, developments, highways, and other structures. A raging flash flood, such a the infamous Big Thompson Canyon flood, will scour the earth down to bedrock, removing, at the same time, any accretions of human activity that happened to have been on the surface. Compared to the total energies released in even a moderate earthquake or hurricane, the most devastating explosives devised by man are utterly puny. At no time is the frailty of human existence so apparent as in the aftermath of a serious disaster.

The magnitude of such events, the energies involved, and their intrinsic unpredictability severely limit the possibilities for controlling the events. There is little technology can do to prevent the rains from falling or the winds from blowing, and there is nothing we can do that will seriously alter the geology, hydrology, or meterology of the earth. Our response to enviro-

mental hazards must therefore, of necessity, assume one of two forms: either we take steps to avoid disasters in advance, or we develop measures to deal with their effects in the aftermath. Controlling, much less preventing, the events themselves is well beyond present and any likely future technology.

Solutions to the problems posed by environmental hazards, in short, require more than convenient technological *fixes*, and it is for this precise reason that there is a *politics* of natural hazards in the first place. If we cannot prevent rivers from flooding, perhaps we can prevent people from locating in flood-hazardous areas; if we cannot prevent the winds from blowing, perhaps we can persuade people to build structures that withstand severe winds; and if we cannot prevent the earth from quaking, perhaps we can at least minimize the inevitable havoc by limiting the development of areas with high seismic risks. We must deal with the problem, if at all, by influencing the behavior of individuals, groups, and communities living at risk from these hazards.

Unfortunately, many political solutions to the problems of environmental hazards conflict with other legitimate human values. We could, for example, eliminate the loss of life and property caused by floods by evacuating low-lying areas contiguous to rivers. Yet virtually *all* the major cities in the nation are built up around rivers because cities once depended on the rivers for commerce and transportation. Evacuation, while possible, would require nothing less than the radical transformation of the social and physical ecology of the contemporary urban scene. Likewise, we could avoid hurricane hazards by depopulating coastal areas from Texas to Maine. And yet, in Florida alone, there are 5½ million people who live in coastal counties and thus face some level of hurricane risk. We could greatly lessen earthquake hazard in San Francisco by removing parapets and cornices and hazardous old structures, but in so doing we would likewise destroy much of the city's elegance and charm. Whenever we take political steps to deal with environmental risk, in short, we find some potential for conflict and some need for compromise: We trade some degree of safety from hurricanes for the fine luxuries of oceanfront living, or some degree of safety from flood for the costs of abandoning an expensive urban infrastructure, or some degree of seismic safety for the obvious attractions of San Francisco and Los Angeles. Although the options open to us are typically clearcut, the "best" choice among them often is not

THE STUDY

The main objective of this research project was to estimate the amount and content of support for and opposition to certain nonstructural disaster-

mitigation policies and programs. Because the major types of such policies and programs under consideration—land-use management and building codes—would require state and local government cooperation in enacting appropriate legislation and implementing programs, the focus of attention was placed squarely on local and state governments. There are many measures a state or local community can take to lessen the risk its citizens face from environmental hazards. Some states and communities have already taken many of these steps and are quite advanced in their environmental-risk management; other states and communities have taken a few steps; still others have done practically nothing. What accounts for the variation across states and localities in their willingness to deal with environmental hazards? In virtually every state and local community, we find some partisan groups actively working toward hazard-risk-mitigation goals, other groups in active and contentious opposition, and still other groups for whom the entire issue is a matter of little or no concern. How do the major sectors of state and local power structures line up on these issues? What degree of political influence does each group bring into the battle? As we discuss later, the policy options open to governments for dealing with natural hazards are relatively few in number (at least at the conceptual, if not operational, level). Which of the available options are preferred by those with political influence and by the elected decision makers who formulate, implement, and enforce state and local policies? Where does environmental hazard fall on the agenda of state and local political concerns? Is it a high-priority item? These and many related questions constitute the substantive content of the research reported here.

The conclusions advanced here are based primarily on a survey we conducted in the summer of 1977. All told, we surveyed more than 2000 political elites in a sample of 20 states and 100 local communities across the nation. Respondents were chosen because they occupied positions of influence in state and local government or because they represented part groups with putative interests in the management of environmental rise Thus, at the state level, we interviewed governors, state legislators, planners, state geologists, Civil Defense directors, and representatives of real estate, development, insurance, and banking interests, as well as many others. At the local level, our respondents included mayors and city managers, local legislators, bureaucrats in planning and zoning offices, flood-control officials, Public Works officials, Red Cross and Civil Defense representatives, realtors, developers, bankers, private-sector interest groups such as the League of Women Voters, the Chamber of Commerce, and the local taxpayer's association, along with many other groups. In no sense did we attempt a random sample of state and local decision makers, much less of the general public. Our respondents were chosen to represent those sectors

of state and local power structures that either are directly responsible for formulating relevant legislative initiatives or that maintain state and local disaster preparedness and response mechanisms or have some *stake*, direct or indirect, in the issues posed by the management of environmental risk.

The states and local communities studied here are those at relatively high risk: They were sampled with probabilities proportionate to the total population at risk from floods, tornadoes, hurricanes, and earthquakes. States and communities with larger populations and higher levels of natural hazards risk were proportionally more likely to fall into the sample. Because of the uncertainties involved in calculating hazards risk, it is difficult to be very precise about the characteristics of the ensuing state and community samples. A reasonable guess is that the 20 states in the analysis contain perhaps three-quarters of the total American population living at risk from these four natural hazards

In sum, the study we undertook deals quite directly with the most influential people in the hazards risk area, people who either are or can be expected to become active in risk management issues and who represent the states and localities that themselves present the potentially most serious natural hazards problems. Technical details and a description of the samples of states, communities, and decision makers are presented in Chapter 2, "Study Design."

THE POLICY OPTIONS

What are the policy options open to political decision makers considering the problem of environmental hazards? Whereas there are hundreds or thousands of specific policy measures that might be implemented, the range of generalized approaches to the problem is quite restricted First, on the increasingly attractive principle that the best government is one that governs least, the simplest policy option is no action at all or, what amounts to the same thing, a policy that allows individuals to assume whatever level of environmental risk they wish, as determined by their choices in the real estate market, unrestricted by interventions of local, state, or federal governments. This policy emphasis asserts, in short, that people have the right to locate in hazardous areas if they want to, so long as they are willing to live with the consequences of that decision. People who invest in General Motors are wagering that the company will prosper. If this is a good bet, the stockholders also profit; if it is a bad bet, they do not. In either case, it is the investors', not the government's, business. Likewise, under the no-action policy, a family that chooses to live in the floodplain wagers that a flood will not occur during the probable lifetime of their home Again, they win if this

is a good bet and lose if it is not, and, in either case, it remains none of the government's business. One is hard-pressed to imagine a more appropriate articulation of this viewpoint than the conservative *Wall Street Journal*'s statement (16 May 1978) that the federal government "must develop the philosophy that he who lives on the beach is a fool and the public isn't responsible for his foolish act." Or, one might add, in the floodplain, or on the fault line, or on the landslide-prone hillsides. The *free-market* approach to environmental risk management asserts, in short, that the government is not responsible for protecting people from their own stupidity.

Unfortunately, the matter is not quite so clear-cut as this. Lack of information as well as stupidity can cause people to locate unwittingly in hazardous areas. *Hazardous areas* are difficult to identify; even at the present state of the art, hazard-risk mapping by experts is inexact. Unscrupulous operators can find ways to dump hazardous properties on naive and unsuspecting buyers. And, even the most risk-aversive individuals cannot avoid environmental hazards altogether; the rains and winds and geology and so on are ubiquitous across the earth's surface and no one can live entirely free of their possible untoward effects.

For these and other complicated reasons, the free market, when it has been allowed to do so, has historically tended to place enough people and their properties in areas of high environmental risk, such that over a large enough area (say, the United States) or a long enough time span (say, a decade), some sizable fraction of the population will necessarily and inevitably suffer catastrophic losses whose *cause* is that they happened to be in the path of a horrifying, unpredictable, and largely uncontrollable event And while it is easy enough to be tough-minded about these things before the fact, it has proven extremely difficult to maintain this attitude in the aftermath of a serious disaster. Who among us would feel comfortable telling a family that was just wiped out by flood that it is their own fault or that they ought not to have lived there in the first place? The impulse to come to the assistance of families and communities ravaged by disaster, to aid and comfort to the extent possible, and to help in their restoration, seems fundamental in the human experience.

Providing relief and rehabilitation assistance in the aftermath of a disaster is thus the second major policy alternative open for dealing with environmental hazards. Historically, victims of disasters have turned to governments for postdisaster aid, mainly because only governments command the resources necessary to deal with the aftermath problems of a serious disaster event. In recent times, governments have responded generously. In the United States, a formal, sustained disaster relief policy can be traced to the passage of the Disaster Relief Act (PL 81-875) in 1950. Prior to that legislation, there was, for all practical purposes, no ongoing federal disaster relief

policy except for a policy of building flood-control structures in high-risk areas, which dates to the Flood Control Act of 1936. Prior to 1950, the major regularly available source of postdisaster assistance was the American National Red Cross, a private voluntary association operating under a federal charter; such federal disaster legislation as there was in the pre-1950 era was ad hoc, consisting mainly of bills passed in the immediate aftermath of a major catastrophe and applying just to that particular disaster.

Following the passage of PL 81-875, "the Federal government has assumed a leading role in disaster relief [Kunreuther, 1973 4]." The current *Digest of Federal Disaster Assistance Programs* (Federal Disaster Assistance Administration, 1978), which merely lists (with brief descriptions) the disaster assistance programs currently operated by the federal government, is 126 pages long! The legislation described there reflects a history of increasingly liberal benefits for an increasingly broadly defined victim population, with the policy emphasis on relief, assistance, and rehabilitation in the disaster's aftermath.

Recent disaster policy trends culminate in the Disaster Relief Act of 1974 (PL 93-288), the enabling legislation for most of the present federal disaster relief effort. Among many other services, PL 93-288 provides $ 25-million grants to each of the 50 states to conduct studies of their hazard problems, direct grants of up to $5000 for individuals and families suffering loss in a disaster, low-cost Small Business Administration loans for losses not covered through the grant-in-aid provision, grants to local communities for rebuilding damaged public works, mental health counseling for disaster victims, and so on. The operant principle underlying these policies is that victimized individuals, businesses, and communities should be restored as quickly and fully as possible to their previous condition.

The basic effect of policies emphasizing governmental assistance in the postdisaster period is to lift the burden of environmental risk from the shoulders of the individuals and communities who, through their choices, have assumed it, and to spread that risk over the entire tax-paying population. Postdisaster relief, in short, "socializes" environmental risk so that all individuals, whether themselves living at risk or not, assume a share of the total burden proportionate to their tax burden. Because of this, the argument is increasingly heard that such policies offer perverse and counterproductive incentives, namely, postdisaster relief provisions punish risk-averters and reward risk-takers. The wise and cautious are made to pay for the folly, shortsightedness, and simple bad luck of others. In addition, these policies encouage the settlement of hazardous areas because they absolve individuals from any responsibility for the risk involved. The message these policies are alleged to send is that one can freely build and rebuild in hazardous areas because the government will always be there to shoulder the losses

whenever disaster strikes again. This possibility is causing many policymakers at all levels of government to consider alternative strategies for managing natural hazards risks.

A third policy option, of course, is to do what one can to contain or control the hazard in the first place. This is possible at least to some extent in the case of water-borne hazards, and has typically involved the construction of so-called structural mitigations such as dams, levees, channels, seawalls, and other structures that would contain excess water and prevent ensuing floods. As noted above, this approach to the management of flood risk has been an element of federal hazards policy at least since the New Deal. The appeal of these approaches, of course, is that they are technological fixes that work by themselves, with or without modifying the land-use choices of individuals or communities. In addition, structural mitigations typically involve large construction projects that create numerous employment opportunities. Sometimes they simultaneously solve other serious problems as well, such as problems with community water supplies or the lack of recreational opportunities, etc. These structural mitigation approaches have historically proven very attractive as a technique for managing water-borne hazards risks.

But here too, there are serious potential problems. First, there is the untoward environmental effect of such large-scale structures. More importantly, such approaches may pose many of the same perverse incentives that are posed by postdisaster relief policies. By definition, flood-control structures of any type encourage, rather than discourage, habitation of the floodplains. Furthermore, any such structure must be designed to some standard, the standard being the largest disaster event that can be contained by the structure. And while such structures may protect admirably against events at or below the design standard, they may exacerbate the destruction caused by events that *exceed* the design standard. Sooner or later, of course, a flood bigger than the design flood is bound to occur. For this last reason, enthusiasm for structural approaches to water-borne risk mitigation has begun to wane, at least in some federal policymaking circles.

Unwilling to do nothing, as the free-marketeers would counsel, yet equally unwilling to live with the possibly counterproductive consequences of structural mitigation measures or policies emphasizing postdisaster relief, policymakers have begun to consider the so-called nonstructural mitigation measures as possible supplements or alternatives to the more traditional approaches. Chief among the nonstructural options is land-use management in areas of high environmental risk; here, *land-use management* is broadly construed to include not just standard planning and zoning practices but also building and construction standards; the general idea behind such an approach is to prevent development in hazardous areas in the first place or

to assure that any structures that are built are designed to withstand environmentally hazardous events.

Nonstructural hazard risk mitigation is the latest trend in natural disaster policy. Prominent policy examples would include the National Flood Insurance Program (NFIP) (discussed in detail in Chapter 6), the Coastal Zone Management Program, and the Earthquake Hazards Reduction Act of 1977, all of which emphasize land-use management approaches. The present and likely future commitment of the nation to these nonstructural approaches to the management of environmental risk was evidenced quite emphatically in a communication from then-President Jimmy Carter to four of his Cabinet officials.

> For many years non-structural measures to reduce flood damage have not been given as much emphasis as structural measures. Non-structural alternatives are often more cost-effective and less environmentally damaging than structural measures. Therefore, there is a need to emphasize non-structural measures, including land acquisition, with existing Federal Programs where consistent with primary program purposes. To accomplish this objective, I am directing your respective Departments to utilize existing programs to encourage the use of non-structural floodplain management practices.

On the surface, these nonstructural approaches seem to have much to recommend them, beneath the surface, they reveal many of the same problems that other approaches face. We have written at some length on this issue elsewhere and merely summarize here (see Wright and Rossi, 1981). Federal land acquisition, such as suggested in Carter's memorandum, was tried in Rapid City, South Dakota, after the devastating flash flood in 1976. The government purchased the entire floodplain at predisaster values, the cost of which worked out to some $12,000 for every man, woman, and child in Rapid City. So the land acquisition alternative is not a cheap one. And there is a related problem, especially in cities: When some areas of a city are declared off-limits to development, for hazard-risk management purposes or for any other, the alternatives are to build elsewhere or not to build at all. For areas that are already heavily developed, the first alternative adds to urban sprawl and the second amounts to a no-growth policy, most cities will find these options equally unattractive.

There is yet another problem: Nonstructural approaches to hazards risk, unlike most other approaches, require the active cooperation of state and local governments. The right to regulate the uses of land is left by the Constitution to the states; most states, in turn, delegate such authority to local governmental bodies. Thus, one cannot take a land-use management approach to flood or earthquake hazard unless local communities can be persuaded to pass and then enforce relevant legislation. Enforcement requires a heavy administrative commitment: Maps designating hazardous areas must be drawn and disseminated, zoning laws must be passed and protected from the incessant nibbling of variances and appeals, and violations must be detected and punished. In short, the effectiveness of these nonstructural or land-use approaches turns, almost entirely, on the zeal with which local governments administer and enforce them. Many local governments often seem incapable of effectively administering even simple laws and regulations, and there is no reason to expect hazard-risk management to be an exception.

The choice among available policy options in the hazards risk area, in short, is not an easy or clear-cut one. Some options seem coldhearted, others appear to increase, rather than decrease, the overall level of hazard risk, and still others depend for their effectiveness on the actions of governmental units that may be unenthusiastic or even hostile.

THE SALIENCE OF NATURAL HAZARDS

In the survey, there is much evidence that natural hazards issues are not especially salient in most states and communities at the present time. There are, at any given instant, a handful of communities and states who have just suffered a serious disaster and in these communities and states hazard risk issues will often be high-priority items. Most communities and states will *not* have had a recent serious disaster experience, however, and in these areas, dealing with environmental hazards is of much less concern.

Our most compelling evidence on the low salience of hazard-management issues is presented in Chapter 3, "How Important Are Natural Hazards Problems to State and Community Elites?" The major thrust of the findings here is quite straightforward. For the most part, political decision makers in the states and local communities do *not* see environmental hazards as a very serious problem, particularly in comparison to the many other problems that these governmental units are expected to be doing something about. We asked each respondent in the sample to rate the seriousness of 18 potential state and local problems, including 5 environmental hazard problems. In all states and communities, the most serious problems are inflation, welfare, unemployment, and crime, and the least serious, at least in the minds of our respondents, are floods, hurricanes, tornadoes, and earthquakes. It is a significant fact that in the aggregate, pornography was seen as a somewhat *more* serious problem than any of these natural hazards problems, only "race relations" and "too much economic growth" were considered less serious than floods, the highest rated of the 5 hazard issues we asked about. (Parallel data for the population of 9 cities in Califor-

nia, reported in Chapter 5, suggests that the general public shares this view of the relative seriousness of natural hazards problems.) This could be construed as evidence that satisfaction with traditional hazards policy is widespread. If the problems are not serious, then existing policies must be working. From these results it would seem to follow that environmental hazards problems will *not* compete very strongly against other state and local problems for a share of their finite resources.

The seriousness attributed to hazards problems varies across elite groupings in a predictable manner. Hazards specialists tend to see these problems as relatively more serious, real estate and land-development interests as less serious, with other elites arrayed between them. A second interesting tendency is that hazards specialists also tend to *understate* slightly the seriousness of other problems relative to the seriousness attributed to these problems by other groups. Hazards specialists thus tend to inflate the seriousness of problems that most elites see as rather trivial (namely, the hazards problems) and deflate the seriousness of other problems that most elites regard as the most serious problems facing the community or the state.

In general, the best predictor of the seriousness attributed to hazards problems is prior experience with disaster; this holds at all levels of aggregation. Thus, respondents who have personally experienced a flood see flooding as a more serious problem than those who have not; likewise, flooding is seen to be a more serious problem in states and communities that have recently experienced one than in states and communities that have not. It should be noted that experience with disasters does not radically shift the seriousness of natural hazards to the top of the list of serious problems. The salience of natural hazards problems is higher, but not high enough to make such problems appear more serious, say, than that of economic growth.

Neither prior experience with disasters nor the seriousness attributed to disasters predicts policy preferences, contrary to what might be expected. The apparent lesson is that disaster experience raises slightly the salience of hazards-management issues and causes persons to take the problem more seriously but does not create any firm elite consensus on what policy emphases to pursue. An interesting implication is that it may prove more difficult to implement new hazard-management measures in states and communities with the most serious hazards problems. In states and communities with little or no disaster experience, the salience of the issue is so low that virtually any measure could be instituted without opposition; in states and communities with extensive disaster histories, everyone may agree that "something must be done" but not agree on what.

Another significant pattern that emerged is that problems in general, and hazards problems in particular, are generally viewed as more serious among state elites than among local elites. The disaster problems of any given state

are an agglomeration of all the specific disaster problems of each of the communities in the state, just as the federal disaster problem is an agglomeration of the states' disaster problems; thus, *objectively*, virtually any problem becomes more prevalent and hence more serious the larger the political unit from whose perspective it is is viewed. But the further implication in this case, not a comforting one, is that different political units may well have sharply differing views on how a hazard risk ought best be managed. From the federal perspective, for example, the flood problem may be prevalent enough to warrant large-scale, intrusive, expensive risk-mitigation measures; at the level of local communities, these measures may appear to be unneeded, capricious, inequitable, possibly even counterproductive. In some sense, then, conflict among various levels of government over how to manage environmental hazards may well be inherent in the nature of the problem itself.

A key, if obvious, implication of this point is confirmed in Chapter 4, where we present data from the survey on the victimization of individuals, communities and states by the four major natural hazards. As would be expected, states are more prone to victimization by any of these disasters than are local communities, if only because they present larger targets in the first place; further, the estimated return probabilities for another serious disaster in the next 10 years are everywhere higher among state than among local respondents. Thus, states regard their hazards problems more seriously than local communities, are more likely to have been hit by a serious disaster in the recent past than are local communities, get hit by serious disasters more often given that they are hit at least once, and are more likely to expect a repeat disaster than do local communities. These results thus make it plain that hazards management is a more pressing issue at the level of state governments than among local governments. Correspondingly, we can expect that it is more pressing at the Federal level than at the level of any particular state. One possible implication of this pattern, which tends to be confirmed in the historical record, is that policy innovations and directives will originate at high governmental levels, typically the federal level, and then be imposed on lower governmental levels. This does not auger well for the future of risk-management policies that depend critically on the cooperation and active support of lower-level governments, such as the nonstructural mitigation measures.

SUPPORT FOR POLICY ALTERNATIVES

In Chapter 4, "Elite Support Levels for Federal Disaster Policy Alternatives," our key finding is that most respondents are heavily attracted to

traditional policy approaches. Of the options we presented to them, emphasizing structural mitigations was most favored; the second most-favored option was to emphasize postdisaster relief. Nonstructural approaches, in contrast, were rejected by a small majority, as was an approach emphasizing compulsory, government-subsidized hazards insurance. Thus, the politically influential respondents in our sample prefer traditional policies over the new policy directions. It can also be mentioned that the free-market approach, while rejected by a clear majority, was strongly favored by one-tenth of the respondents and was appealing at some level to more than one-third. So there is a sizable minority view among state and local elites that the federal government might just as well stay out of the hazards area altogether, and a substantial majority view that traditional policies of structural mitigation and postdisaster relief represent the most appropriate policy responses. The distinct lack of enthusiasm for nonstructural measures among the persons who will eventually have to implement and enforce them does not, in our view, bode well for the future of such policies in the United States.

A second important finding reported in Chapter 4 is that the majority of our respondents tell us they could take an exact opposite position on the management of hazard risk (for example, could switch from opposition to support of postdisaster relief approaches) without harming their political positions. The attitudinal data, in short, appear to be much firmer than they actually are; most elites in states and local communities seem free to move around quite substantially on these issues, more or less as they please. So the potential opposition to new measures that our survey reflects will, we think, depend heavily on how the issues are phrased and the policy options are presented.

Respondents who reported a serious disaster occurrence for their state or community were asked whether the disaster had had long-term effects. For the most part, these data tended to confirm findings from other studies (e.g., Friesema, Caporaso, Goldstein, Lineberry, and McCleary, 1979; Wright, Rossi, Wright, and Weber-Burdin, 1979). Most respondents reported that the disaster did *not* have long-term effects. Flood disasters, particularly large and recent ones, were an exception, with many respondents reporting long-term economic and, especially, policy effects. Still, although 11 states reported a serious flood in the last 10 years, in only 6 states did a majority of respondents cite a lasting economic effect, the same proportion cited a long-term policy effect. In contrast, tornadoes and hurricanes are usually seen as having no long-term effects at all, except for very recent events where the physical effects of the disaster sometimes remain noticeable.

That local and state political influentials favor traditional alternatives may reflect their satisfaction with the current state of disaster policy. Their endorsement may reflect an attachment to the general ideological principles that lie behind the policy choices. The exact breakdown of this mixture remains to be investigated.

The preference for traditional over nonstructural approaches is not uniform across the respondents in our sample; some groups prove predictably more favorable to nonstructural mitigation concepts than others. In general, those most favorable to such approaches include what we call *hazards specialists*—persons whose positions involve them quite intimately and directly with environmental hazards (such as members of the Civil Defense or Red Cross). A second supportive group consists of what we call *supralocal* or *suprastate* elites—elites in the states and local communities whose primary interests or constituencies lie elsewhere. At the local level, supralocal elites include the Regional Alliance of Local Government, the local Red Cross, or the local chapter of the league of Women Voters. At the state level, state representatives of the Farmer's Home Administration, the Small Business Administration , or the Federal Insurance Administration are members of the suprastate elite.

At the opposite pole, we find elites representing the real estate and land-development sectors to be consistently most opposed to nonstructural approaches and to strongly favor more traditional policies.

Between the hazards specialists and the land-developers lie most of the major opinion leaders to be found in state and local governments—executives, legislators, the media, business interests, and so on. None of these groups is as enthusiastic about nonstructural mitigations as are hazards specialists; likewise, none seems so clearly opposed to such measures as real estate and land-development interests. Their outlooks on the management of hazard risk are, for the most part, uncrystallized and indistinct; a good bet is that they will move in whatever direction the political winds are blowing. In any case, it seems reasonably clear that the ultimate fate of hazard-management policies at state and local levels will depend much more on how these currently undecided elites eventually come down on the issue than on the present line-up of political forces.

POPULAR ASSESSMENTS OF HAZARDS AND HAZARD POLICIES

Chapter 5, "Popular Assessments of Hazards and Hazards Policies: The Case of California's Nine Communities," presents evidence from a special adjunct survey conducted in nine communities in the state of California, the same nine local communities that fell into the elite sample. Thus, for each of these nine communities, we have parallel data from some 20-25 local elites *and* from a sample of 100 local residents. On all points where a direct

comparison is possible, there are substantial—indeed, rather impressive—levels of agreement between residents and their political elites. Communities with high proportions of elites favoring traditional hazard-management policies also have high proportions of residents favoring the same policies. Elites and residents also tend to agree rather closely on (a) the seriousness of hazards problems in the community, (b) the community's previous experience with natural disasters, and (c) the likely return probabilities for a repeat disaster in the next 10 years. In the contemporary lingo of political sociology, there is thus a high level of *concurrence* between elites and masses, at least in California, on hazards-management issues.

Thus, as among elites, California residents are most favorable to policies emphasizing postdisaster relief and least favorable to the free-market position. California residents seem somewhat more favorable to nonstructural mitigation approaches than do their elites but this may only reflect differences in how the questions were worded.

The California general-population samples were also asked about the status of various hazard-mitigating legislation in their particular communities (whether, for example, the community had laws governing construction in areas of flood or seismic risk or whether there were special building code provisions for structures to be built in such areas). Few respondents had any knowledge at all of these matters; those that did were as likely to be incorrectly informed as not.

For the most part, California residents (as well as elites) do not consider natural hazards to be serious problems. Pornography was seen to be a more serious community problem than floods, fires, or earthquakes (but less serious than drought). Fires were seen to be more serious than either floods or earthquakes (reflecting, perhaps, only that much of Southern California was indeed burning while the survey was being conducted). That earthquakes are seen by California residents to be substantially *less* serious than even pornography is, we think, a truly stunning result.

Our attempts to predict seriousness ratings and policy preferences among the California sample reveal a weak but rather interesting pattern: in general, renters, lower-income respondents, and persons who have lived in the state only for a short while are more favorable toward nonstructural mitigation approaches and see hazards problems, especially floods, fires, and earthquakes, as *more* serious than do older, more affluent, and more established state residents. While low-income people in general tend to favor government income-transfer policies (as NFIP is to some extent), that long-term residents were less favorable toward nonstructural mitigation approaches is somewhat puzzling. Perhaps they have adjusted to the level of risk with the experience of residence. In addition, there are cognitive dissonance processes: Things that are negative about alternatives tend to recede in salience once choices are made and lived with. Long-term California residents have adjusted their assessment of their environments to support their choice of residence in that state.

Although Californians do not see natural hazards as very serious community problems, natural hazards do appear to be a source of some personal worry or concern. Many respondents seem especially concerned about the ability of local emergency services to handle the aftermath consequences of a serious disaster event. The most widespread concern is that hospitals would not be able to care adequately for all the victims, followed by worries that essential community services such as water, sewage, gas, etc., would be disrupted for some extended period.

Despite the apparent concern, Californians have done little to protect themselves and their families from the possible effects of environmental hazards. First, hardly anyone had even heard of NFIP, so virtually none of the respondents had yet protected his or her potential property loss through the purchase of flood insurance. A much higher proportion (but still only about 25% of the total) had at least considered getting earthquake insurance, generally available in California, but only about 10% actually carried earthquake insurance on their property at the time of the survey. Furthermore, about 25% of the sample chose to *live* in some sort of high-risk location or structure—on the sides of hills, for example, at the bases of canyons, in areas surrounded by dry brush and timber, or in mobile homes. (This tally does *not* include any count of persons living in floodplains or near fault lines or related areas of disproportionate seismic risk.) In the same vein, some 40% of the households in the sample are without a first-aid kit, nearly 60% do not have a fire extinguisher in the house, and more than 80% have not installed a smoke or fire alarm.

ELITE APPRAISALS OF THE NFIP

The archetype of the new trend in federal disaster policy is the National Flood Insurance Program (NFIP), first instituted in 1968 and substantially revised in 1973 and 1977. Because of the prominence of NFIP in the nation's present disaster policy arsenal, a substantial portion of our survey dealt with respondents' experiences with and assessment of the program; the findings are reported in Chapter 6, "Elite Appraisals of the NFIP." As of the summer of 1977, well over 90% of our elite respondents at both state and local levels had at least heard of NFIP, and almost all who had heard of it were highly favorable to it, although they knew little about their community's participation in the program. (In contrast, about 90% of the California sample had *not* heard of NFIP.) This endorsement of the NFIP program is

puzzling because a majority of these respondents stated that they were opposed to nonstructural hazard mitigation and to compulsory hazards insurance, both of which are central to NFIP policy. We have no firm explanations, except to point to the acceptance that existing programs typically enjoy until problems arise. In addition, many of the communities in our sample had not gone very far toward implementation of the NFIP, and hence knowledge about what the program might imply in the way of their land-use management was limited. NFIP may be perceived primarily as an insurance plan and not as a floodplain land-management program, whereas in fact it is both. When its dual nature becomes apparent, reactions to the NFIP may change.

In general, respondents, communities and states with the most favorable opinion of NFIP are those with the most extensive prior experiences with water-borne hazards, those who regard flood and hurricane problems as relatively more serious, and those who tend to agree most strongly with the NFIP risk-mitigation concepts. Consistent with our other results, hazards specialists at both state and local levels tend to be somewhat more favorable to NFIP than the average respondent, whereas real estate and land-development interests at both levels tend to be somewhat less favorable than the average respondent. Indeed, the skepticism of real estate and development interests for NFIP comes through rather sharply in all analyses reported in the chapter. One final pattern of some interest, given an earlier theme, is that state elites generally have more favorable attitudes toward NFIP than do local elites, even though local communities are assigned a critical role in NFIP whereas states have minor or nonexistent roles.

Although NFIP has been highly controversial in a few communities (especially in Missouri and Texas), most local elites who had at least heard of the program felt that their community's flood problem was serious enough to justify participation. Most elites also felt that NFIP was "fair" to the parties most directly affected, especially to homeowners living in flood-hazard areas. (Real estate and land-development interests felt that NFIP was less fair to all parties than did other elite groupings.) We also asked local elites from participating communities what kinds of problems NFIP had created. Most elites mentioned at least one or more NFIP-related problems, the average was close to four problems. Consistent with all previous results, real estate and land-development elites mentioned far more problems on average than did other respondents. The two most commonly mentioned problems were the NFIP floodplain mapping requirements and lack of interest among homeowners in purchasing the insurance. Other problems often cited in discussions of NFIP—for example, that the local floodplain regulations often get "appealed" and "varianced" to death, or that the program caused ongoing development projects to be abandoned—were mentioned by very few of

our respondents. Finally, despite the controversies surrounding NFIP in the U.S. Congress and in some local communities, only about 10% of our respondents report that NFIP had sparked "much" controversy in their communities, and some 40% report that it had sparked no controversy at all. Although flood-insurance specialists in the Federal Insurance Administration no doubt see things differently, NFIP is *not* seen as being (or having been) highly controversial among the local elites in currently participating communities. Again, it should be noted that for most communities NFIP had yet to be fully implemented.

Local elites in participating communities also report generally positive opinions about NFIP's probable effects. Over 90%, for example, agreed that persons in flood-prone areas could now "feel more secure" knowing that flood losses would be protected through insurance, and some 70% felt that consciousness of flood hazards in the community would increase "now that flood-prone areas have been mapped." Most respondents also felt that the NFIP restrictions on building and development in floodplains were "about right" (rather than too strict or too lenient). In all cases, real estate and land-development interests were more skeptical than other respondents. Finally, about 85% of the respondents felt that NFIP would have a strong effect or at least some effect on construction and development in flood-hazard areas over the next 20 years. Interestingly, respondents in real estate and land-development were just as likely as all other respondents to agree with this view, which is perhaps why they are opposed to the program in the first place.

PATTERNS OF INTEREST, GROUP ACTIVITY, AND POWER

The concluding chapters of the volume, Chapters 7 and 8, attempt to piece together the political coalitions and networks that are relevant to environmental-risk management at state and local levels. The questions we address involve such topics as who in the community (or state) is active in these issues, who is important to have on one's side, which elites are in frequent contact with which other elites, what positions have various sectors of the elite taken on these issues, and so on. Chapter 7, "Patterns of Interest and Power in Nonstructural Hazard-Mitigation Politics in Local Communities," shows that groups that are perceived as most active on issues involving "local natural disaster legislation or regulation" include, first, local elected officials such as mayors and city councilmen; second, persons responsible for managing the local community infrastructure, such as planners and Public Works officials, and third, hazards specialists such as mem-

bers of the Civil Defense, police and fire chiefs, and the local Red Cross. The Chamber of Commerce and local media were also seen as being relatively active on these kinds of issues. In general, higher levels of activity for all groups were seen in communities where hazards issues were most serious, as indexed by the average "seriousness" ratings given to hazards problems, as would be expected. The data also reveal some clustering in activity levels across communities: In some communities, certain sectors of the elite become more active than in other communities. Furthermore, the factors apparently affecting the level of activity vary from one sector of the elite to another. Real estate interests and public officials, for example, are most active in communities with the most salient disaster problems; local Republican and Democratic party leaders, in contrast, react less to disaster seriousness and more to the level of local controversy surrounding hazards-management issues.

Activity, of course, is only one aspect of the political sociometry, power is another. To determine the varying levels of power and influence, we asked the local respondents to tell us who they would like to have on their side if they were trying to get "something enacted . . . on some issue concerning natural disasters." With this as the measure, mayors and city councilmen are the most influential, as would be expected. Following closely are the local media. A majority reports that they would also like the local Civil Defense director and the Chamber of Commerce on their side. Less than 50% of the respondents mention any other group. Interestingly, only a third mention "leading industries" in this connection, only 25% mention "land developers," and only 22% mention the local Real Estate Board. Also of some interest, only 29% of the respondents mentioned themselves as potentially important or influential.

We also asked respondents which elite groups they were in "more or less regular" contact with, patterns of contact tend to follow patterns of influence. Thus, groups mentioned as contacts by more than 50% of the sample include, as before, mayors and city councilmen, the local media people, and the Chamber of Commerce. The city planner, police, Public Works, and fire departments were also each mentioned by nearly 50% of the respondents. In general, individual patterns of contact with various groups varied mainly as a function of position. Respondents from the private sector typically showed less contact across groups than respondents from the public sector. For example, only about a third of the respondents reported regular contacts with bankers, land developers, or industrialists, whereas more than 70% claimed regular contact with members of the local city council. Hazards specialists, in particular, seem to be well outside the inner network: Only 37% reported a regular contact with Civil Defense and only 23% reported regular contacts with the local Red Cross director

Which groups in the local community are perceived by the elites we sampled as generally favoring nonstructural mitigation approaches to the management of hazards risk? In the main, the answer was, "Hardly any." Indeed, only one group was seen by at least a majority of our respondents as favoring such approaches, the city planning department (cited as favoring such measures by 54%). Others perceived as supportive of these measures by at least a third of the respondents include city councilmen, mayors, Public Works officials, local conservation groups, and the Civil Defense director. Other groups in the community, of course, may well support such measures, but our respondents did not know about it. This finding confirms that these issues are generally not of high salience in most local communities.

The degree to which local elites are seen (by other elites) to favor such measures varies quite substantially across communities. The highest perceived elite favorability (weighted, in this case, also by the activity and importance of each group) is registered in cities with the most extensive historical experience with disasters.

A final question in the sequence asked respondents which groups were influential on their own (the respondents') opinions about hazard management issues. By this measure, the most influential elite groups are again mayors and city councilmen, the local media people, city planners, the Civil Defense, and, surprisingly, local conservation groups. All these groups were mentioned as influential by 33% or more of our respondents. In contrast, traditionally influential elites such as bankers, industrialists, and land developers were mentioned by relatively few respondents.

All our analyses thus suggest that local elected officials—mayors and city councilmen in particular—are the key people in the local community when it comes to environmental-risk management issues. They are seen as the most active groups, the ones most important to have on one's side, the ones who most influence the views of others. In addition, they are seen as largely favoring land-use and building code approaches to natural hazards risk.

Because of the prominent role that local communities must play in regulating land use for hazard-risk management and the paramount importance of local elected officials in the political networks of the local community, Chapter 7 presents a special subanalysis of the factors influencing the hazard-management outlooks of the 383 local elected officials that fell into the sample. For this analysis, we constructed a measure of the local "balance of power" on hazard-management issues from the responses of local officials to the questions, Who is active, who is important, who is influential in shaping your own views, and who are you in regular contact with? Each group asked about is scored "1" for each "yes" answer given; scores are then summed across the four variables and multiplied by +1 if the group is

seen as *favoring* nonstructural mitigation approaches and by −1 otherwise. The ensuing group-specific scores are then summed across all elite groups in the local community. The resulting index thus measures the local balance of power on the issue; once normed for the number of elite groups in each community, the index takes on a positive value if active, important,and influential elites in the community tend to favor nonstructural mitigations, and a negative value if the active, important, and influential elites tend to oppose such measures. This *power-balance index* is the single most important variable predicting the hazard-management views of local elected officials. It is more important than any measure of the objective seriousness of the community's natural-hazard problem, more important than the officials' subjective views of the seriousness of the problem, more important even than any social or ideological characteristic of the officials themselves. Also of some interest, the effect of this power balance measure was higher in the substratum of communities where disaster salience was higher. Thus, in all communities, but especially in communities with the most serious disaster problems, local elected officials respond first and foremost to their sense of where the local balance of power on the issue lies.

One last issue concerns how respondents are themselves affected by the relevant actors in their states. Conservation groups influence a majority of our elite respondents; no other group sways a majority. Other influential persons or groups are the governor, local officials, the state planning agency, the Civil Defense, and the U.S. Army Corps of Engineers. The clustering of these patterns of influence is very clear: Some key persons are oriented, either positively or negatively, toward elected officials; others to business and industry interests; still others to the disaster agencies.

Chapter 8, "Patterns of Group Activity in State Nonstructural Hazard-Mitigation Legislation," reports a set of analyses parallel to those of Chapter 7 but at the level of states. As in the local communities, state activity in the hazards area is dominated by elected officials: the governor, state house and senate leaders, and the chairmen of relevant committees. Agencies or groups regarded as active by the majority of the respondents include the Civil Defense, the state planning agency, the U.S. Army Corps of Engineers, and the National Guard. In the private sector, the active groups are insurance firms, the construction industry, conservation groups, and the Red Cross.

State public officials appear to be most active when the preponderance of both state and local opinion favors nonstructural mitigation measures and when the NFIP is relatively popular. Public officials are also more active in the more heavily populated states. The business and real estate sectors, in contrast, become more active in states with the most extensive disaster histories. The business cluster is also more active in less prosperous states, as indexed by median household income. Finally, disaster agencies are active

when there is some opposition to the idea of state regulation of land use in high-risk areas.

The power to affect natural disaster legislation is firmly in the hands of elected officials. Most important, in terms of getting things done, are the governor, the party leaders in the state legislatures, and the relevant legislative committees. Backing from other public agencies or organizations in the private sector is not regarded as important by the majority of key persons interviewed.

The majority of state elites apparently do not favor land-use regulation in risk areas or tighter building codes to reduce damage and injury. Conservation groups, the state planning agency, the governor, and the Civil Defense director are the only ones seen as favoring such measures by more than 33% of the respondents.

Paralleling the analysis of local communities, a favorability score weighted by activity and importance was calculated for each group or position. This analysis indicates that the elected public officials, and particularly the committees in the legislatures that deal with disaster-mitigation legislation, are connected with the leading financial institutions and the state Chamber of Commerce. Three other identifiable clusters are the real estate groups, business groups, and disaster agencies. The correlates of favorability also show that the densely populated, highly urbanized, and prosperous states have active, influential elites that are favorable to nonstructural mitigation. Interestingly, a state's experience with disasters appears to be quite irrelevant.

The other major dimension of the structure of power and influence in states is the contact levels among groups and key persons. Unsurprisingly, our elite respondents reported high regular contact with state elected officials. Again, the clear clusters of contact are in terms of elected officials, business and industry (including real estate interests), and disaster agencies The only predictors of regular contact with these clusters are the respondent's position and past activity in other business, professional, or civic associations. None of the characteristics of the state show consistent effects

SUMMARY

This chapter has condensed a large number of specific findings and hinted at their implications for our understanding of the politics of natural disaster and of the prospects for change toward nonstructural mitigating measures. It is now clear that for most local communities natural disasters take a back seat to more pressing problems. The salience of such problems for state elites is somewhat higher, but is also relatively low. This should not be interpreted

as either denial or as a matter of ignorance. The other problems faced by communities *are* more urgent, and more predictably so, than the possible consequences of low-probability events. Furthermore, the low importance accorded to natural disasters means that the politics surrounding them is difficult to forecast and that there is little political disadvantage or gain accruing to officials because of their opinions on natural-hazard mitigation. As a result, the status quo in public policy is endorsed by most, but lightly held. Those who favor nonstructural mitigation measures also do so lightly. This casualness suggests that elites, including elected officials, can be swayed one way or the other, depending on changes in the status quo or changes in the level of conflict over such policies.

There is very little sentiment for blaming the victims of natural disasters for their folly in placing themselves in the way of tremendous natural forces. Sympathy and willingness to extend aid is the dominant stance taken by all elites. The elites endorse traditional measures—structural fixes, postdisaster relief, and rehabilitation measures. Large minorities are in favor of land-use management, stricter building codes, and compulsory, subsidized hazards insurance. Thus, it is significant that the NFIP received so much approval as a program, even though the larger policy underlying the program did not. The NFIP is the status quo and, at least for the time being, an innocuous program to which there are few vociferous objectors. On the other hand, there is some slight crystallization of opinion on disaster policy: Hazards specialists support nonstructural mitigation measures[1] and those who buy, sell, and develop land and buildings are the most opposed to such measures. However, hazards specialists seemingly have little in the way of followings among other elites.

In short, neither ideology nor group structure is well crystalized as yet. It is too early to tell whether nonstructural migration will gain support. Elite members hold contradictory or ambivalent beliefs without feeling pressure to become consistent in their views. Similarly, groups do not line up on one side or the other within a community or state nor are there strong and consistent trends that transcend all places.

[1]A recent letter transmitting a report of a conference on earthquakes and related hazards from a hazards-specialist organization provides a dramatic demonstration of how distorted organizational perspectives can be, saying, "In the days since the conference [held in November, 1977] earthquakes, their related hazards, and all natural hazards have continued to become important items on the agendas of state, local and federal governments."