

PERSISTENT EFFECTS OF DISASTERS ON DAILY ACTIVITIES: A CROSS-CULTURAL COMPARISON*

Patricia Trainer and Robert Bolin

University of Colorado, Boulder

INTRODUCTION

Disasters may be seen as rather abrupt and usually unanticipated events producing extensive physical disruption and a need for relocation of families and their activities. Large-scale disasters have inescapable effects on the quality of life of families in stricken communities.

Disaster research has generally focused on the immediate aftermath of disasters, labeled the emergency period (see Mileti et al., 1975). Such studies have looked at the types and extent of losses, the ways individuals and families manage during the aftermath with respect to the rescue of others, salvaging of possessions, finding food and temporary shelter, and in general reestablishing a familiar “place” to serve as a base from which to initiate long-term recovery plans and activities.

The process of reestablishing the daily routine over the long run has heretofore been largely ignored in disaster research. However, literature in other fields would suggest it as an

area for concern. For example, attempts to develop indicators of quality of life assume that physical setting, material possessions, recreation facilities, educational and social opportunities, and ease in spatial mobility are important to individuals (see Sheldon and Moore, 1968). Also, urban planning literature reflects concern for the physical and social settings of daily routines of families during the period of active urban renewal programs. The effects of large-scale relocations of families on the psychological and perceived well-being of their members were studied by Fried (1967). Certainly relocating physical structures has consequences for neighborhood social organization and function. Neighboring and visiting with nearby relatives constitute an important part of many families’ daily routines (Bott, 1971; Wellman, 1973). Urban renewal has been shown to have a detrimental effect on social linkages and networks for families forced to relocate (Fried and Gleicher, 1961). The importance of use of local facilities to people’s conceptions of their community has been noted (Foley, 1950; Hunter, 1975). Real and perceived changes in community structure and layout will affect how a family “feels” about its activities, the community, and perhaps about life in general.

Suttles (1972:22) refers to the “cognitive maps” residents have of their communities.

*The research on which this paper was based was conducted with the support of the National Science Foundation, Research Applied to National Needs, Grant #APR73-07898 A02, J.E. Haas, Principal Investigator. Any opinions, findings, conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

These maps are mental images that persons have of their community based on their uses of it and their orientations toward it. Such maps are the underpinning for a person's perception of distances to places, routes taken to get to places, and of what exists in the neighborhood or community in the way of facilities, including his perceptions of where he will be welcome and where not.

Within the disaster research field one recent study of the long-term effects of a disaster reports on social relationships. Drabek and Key (1975) found that relationships with friends and relatives were changed among disaster victims in the aftermath of a tornado in Topeka, Kansas. However, they found that change could be positive or negative; in brief, strong bonds got stronger, and weak or weakening bonds became even more unstable or broke altogether.

In disaster situations long-term recovery includes such things as reestablishing a permanent residence and permanent employment, and renewing and stabilizing daily activities such as shopping, attending school, visiting with friends and relatives, and other related social and leisure activity patterns. Linkages with various community organizations such as businesses, voluntary associations, churches and recreational groups may also have to be reestablished after the period of concentration on immediate emergency and recovery activities.

Leisure and social activities will be disrupted due to the relocation of families and to the destruction of the physical facilities for the various activities. Other activities may be disrupted not as a direct consequence of the disaster, but rather due to changes in the physical setting during and after reconstruction. Reconstructed communities seldom are identical to their predisaster form. Spatial relocation of activities not only affects those directly impacted by the disaster, but others in the community as well. The disruption created by disasters may be long term. The complexi-

ties of social life may be disturbed for periods extending beyond the actual physical reconstruction of the community.

MANAGUA AND RAPID CITY

Two disasters which occurred in 1972 will be used to describe and document further the long-term consequences of disasters on the daily activities of disaster victims. The dimension of cross-cultural comparison is permitted by having data from a major earthquake in the capital city of Nicaragua in Central America, as well as from the disastrous flash flood which occurred in Rapid City, South Dakota.

The earthquake of December 23, 1972, in Managua, Nicaragua, damaged or destroyed the man-made environment in over three-fourths of the city. Some 400 blocks in what was the downtown part of the city were for the most part badly damaged. Virtually all activity was prohibited in this area of the city, only two governmental buildings remaining in usable condition. Thus the central business district and numerous blocks of dense residential use were completely destroyed. Damage was heavy though less total in other parts of the city. Thousands of families evacuated the city, but there was definite evidence that most returned to Managua within the first year. Many families were able to take up residence with relatives in less damaged houses, some found vacated housing to rent, repaired their own dwelling, or perhaps erected a new dwelling of crude materials and without legal permit. Within four months following the disaster some 9,000 units of "temporary housing," provided by international aid and the Nicaraguan government, were ready for inhabitation. A minimal initial fee and monthly charge were asked. Yet only about 2,000 families moved into these during the early months of their availability and many soon moved out due to the unsuitability of the area in several respects. Others lived there and suffered the consequences of being located far from the center

of activity, having to contend with poor transportation facilities, and the lack of amenities such as adequate water, drainage, and sanitary facilities. There was little else in the way of large-scale government sponsored rehabilitation and recovery programs for families outside of long-term food distribution to the more destitute, and an attempt to institute a "food for work" program.

On June 9, 1972, a flash flood of massive proportions swept through Rapid City, South Dakota. In an area of several blocks on each side of Rapid Creek there was extensive structural damage; 238 persons lost their lives. This high death toll was an outstanding feature of this disaster, compared to other U.S. disasters. Nearly 1,200 residences were completely destroyed with more than that number receiving considerable damage. Temporary housing had to be found for more than 1,200 displaced families. Other victim families were able to return to their former houses although many of the structures required much cleaning and repair work. Later many had to move again, as the floodway was condemned for residential use, and persons had to relocate out of the flood plain.

Given the preflood housing shortage in Rapid City and the loss of many residential units, the Department of Housing and Urban Development (HUD) was able to place immediately only about one third of those families needing temporary housing. To house the remaining families, HUD purchased mobile homes to serve as temporary housing until the private sector could build suitable new residences. By August, 1972, HUD had placed over 2,100 persons in 445 mobile homes. While the trailers were ostensibly free for one year, it was necessary for the City of Rapid City to assess a \$ 45 site fee (later reduced). The hastily constructed trailer courts in which many of the HUD trailers were placed were the scenes of considerable dissatisfaction and interethnic tension.

The Small Business Administration (SBA)

was actively involved in Rapid City in giving out low-interest loans with large forgiveness clauses to facilitate the repair of flood damaged houses and businesses. By October, 1972, a large-scale Urban Renewal project was underway to clear a floodway. This program made cash grants and related benefits available to victims who had to relocate.

METHODOLOGY

Studies made at each of these sites during the early postdisaster phase (Kates et al., 1973; Mileti, 1974) afforded a base from which to continue research into long-term consequences. The project to study the issues during the reconstruction phase of a community involved a multidisciplinary, cross-cultural design, and included the study of two historical disasters as well as the two recent ones discussed here. This paper reports findings from the sociological portion of the research and only on the part of the study made of the two recent disasters.

A longitudinal research design was employed to assess recovery of families directly affected by the disaster. The families, selected with systematic random sampling procedures, were interviewed at two points in time. In Managua, the number interviewed at both points in time was 376 and in Rapid City 125. During these interviews, respondents were asked questions with the intent of establishing the rate and degree of recovery in the areas of housing, employment and family "life style." The latter area is the focus of this paper. A baseline was established by asking the respondents during the first interview to describe in retrospect their family's situation at the time of the disaster. For the purposes of reporting the findings in this paper, the first interview in each city will be referred to as Time 1, and the second as Time 2. For Managua, the Time 1 interviewing began the last week in July and extended through August 1973, thus in general occurred seven to eight months after the di-

saster. Time 2 interviews were conducted in May 1974, or some seventeen months after the disaster. In Rapid City, the interviews were in June 1973 and June 1974. Time 1 and Time 2 interviews coming one year and two years after the disaster respectively. Typical research constraints created by the contract periods of the grant, the unavoidable situation of the Rapid City disaster occurring six months earlier than the Managua disaster, and the belated recognition of the difficulties attendant to interviewing during the rainy season in Managua led to the somewhat different relative time periods for interviewing in the two sites.

In retrospect, it becomes clear that time may not be the most critical variable anyway, in determining whether or not families were ostensibly at the same point in their recovery process in the two cities. The types of issues and the speed with which certain problems are resolved in the physical and economic reconstruction of a city may make this different in each site. Further case studies such as these would help to clarify that.

Besides the survey methodology, a second method was used in an attempt to get a better understanding of the problems of family recovery as seen by the families themselves. A purposive selection process, intended to get a range of socioeconomic or occupational types and of survey interview responses to questions about satisfaction and recovery levels, was used to identify a few families out of the survey samples for further in-depth interviews. In Managua twenty such interviews were conducted and in Rapid City, five. These interviews, done several weeks after the completion of the survey, were tape recorded and transcribed. They provided further insights into the types of things which created constraints for families in actually recovering from the disaster, as they related in greater detail the losses the disaster created for them personally and the physical differences it made in the community at large, from their view.

Constraints on Recovery

An analysis of recovery in areas of housing and perceived recovery in Rapid City can be found in the Bolin article, "Family Recovery from Natural Disaster: A Preliminary Model" (this issue). It focuses on the family system level while demonstrating that the recovery of victim families is effected not only through the efforts of individual families and their kin groups, but also through community level reconstruction activities.

Recovery in the area of employment was not a serious problem in the Rapid City case, primarily due to the more limited impact of the disaster agent on the business sector. The problem of disaster-induced unemployment was pervasive in the aftermath of the Managua earthquake. Findings on this aspect of recovery in Managua are described in *Reconstruction Following Disaster* (Haas, et al., forthcoming).

As indicated by the literature on other subjects, such as quality of life indicators, urban renewal effects, and basic sociological observations concerning social linkages, as well as Drabek's and Key's longitudinal study of Topeka, Kansas (1975), another area in which recovery must be made is that of the more mundane aspects of daily living, such as shopping, visiting, and other uses of leisure time. It was felt likely that evidence would be found in these two disaster sites that families' attitudinal orientations to these activities and the physical settings in which they occur were disrupted, due to the loss of relatives and friends, the relocation to new areas, and the interruption or relocation of local services and facilities.

The case studies of the two cities indicate that the disruption of routine activities, including use of local facilities, neighboring, kin visitation, and leisure, was pervasive following the 1972 disaster at each site. Further, for some families alterations in daily life styles persisted, or were perceived to still exist, for periods of more than a year following impact.

It can be seen that life style recovery was affected by social, economic, and locational or structural constraints experienced in the aftermath. Also, persons experienced changed perceptions of places or features of their life. To reestablish routine activity patterns, or to institute new patterns considered to be as desirable as were the predisaster set, families will generally be constrained by some or all of these factors. The “normalization” of a victim family’s social, economic, or locational situation is linked to reconstruction activities at the level of the community.

In illustration, a family may have habitually gone to the movies once a week prior to the disaster. During the immediate aftermath they are likely not to think about it as they are preoccupied with finding or preparing temporary living quarters and reestablishing certain social linkages. Then for a while they may not consider it because they don’t really have the money to spend on anything other than replacement of lost possessions. Eventually they may have the money to go, the means of getting there, but cannot attend because the theater has not been rebuilt. In turn, business interests intending to rebuild the theater may be waiting for community planners to establish a master plan of reconstruction. The interdependencies between the various levels of community organization (e.g. families, business organizations, governmental agencies, etc.) can be seen.

To further illustrate various kinds of constraints, and the kinds of interdependencies underlying them, one can consider the example of an elderly person who prior to the disaster was extensively involved in neighboring activities in his or her neighborhood. Due to being relocated after the disaster, the elderly person may desire to reestablish ties to neighbors as an activity, but may not “feel like” associating with persons in the new neighborhood. People who are familiar with others in their neighborhood may not readily accept establishing relations with persons who are unfamiliar to

them in terms of age, ethnicity, or social class characteristics. Such a situation is particularly critical when victim families must seek governmentally provided housing on a first-come-first-served basis. In such instances temporary neighborhoods emerge in which people of disparate backgrounds are placed together but are isolated in terms of social contact. These situations are exacerbated when temporary housing sites are not linked to the rest of the urban area by mass transit, enabling persons to easily visit former neighbors or friends who live elsewhere.

While the reestablishment of permanent neighborhoods may remove some of the constraints against reestablishing new relationships, disasters nevertheless have persistent effects on social networks. Furthermore, because of deaths associated with disasters some relationships simply cannot be renewed, whatever opportunities are provided for relocating in former neighborhoods, or in proximity to former neighbors and friends.

FINDINGS

That two such different cities and different disasters are being compared is mainly fortuitous. The very nature of disaster events can preclude creating tight research designs of matched communities and timing of events. Nonetheless the cross-cultural comparison of the two has proven instructive. Even though details may be quite different due to cultural differences and the differing levels of economic development, the general underlying feature of the persistence beyond the emergency period of the disruption of routines and social networks is obvious in both communities. To some extent there were differences in the constraints underlying the persistence of feeling that things were not back to normal. These may be due to cultural differences, to the nature of the disaster, or to the manner in which the physical reconstruction of the city progressed.

Findings about life style changes will be presented here by describing findings on a particular area of daily activities first for Managua, and then for Rapid City, and then moving on to another area of questioning, repeating the format.

Visiting

Time 1 interviews with Managua respondents indicated some alteration of relationships, especially with relatives, but at that time many were still sharing housing with relatives or had shared in previous months. By Time 2, most had been able to establish a private dwelling, and former patterns of visiting would have had a chance to normalize if it were possible. At that time family respondents were asked if they visited with friends and relatives more, less, or with about the same frequency as before the disaster. About 60% reported they engaged in about the same amount of visiting as before. But 28% indicated they visited less with their relatives than they used to, and 31% reported less frequent visiting with friends than before the disaster.

The in-depth interviews done with some of these families indicated that to a great extent decrease in visiting had to do with the dispersion of persons throughout the city. The city was viewed as being more difficult to get around in than prior to the disaster. Furthermore, the cost of public transportation had risen considerably, and many persons found themselves in poorer economic conditions than they had sustained prior to the disaster, due to the disruption of employment and the rising cost of living. Thus it was a combination of a physical and economic constraint which affected visiting. In some instances relatives were reported still to be living out of the city and thus more difficult to visit. With respect to friends it was not uncommon to hear families reporting that they had not been able even to find many of their former friends and neighbors. People had dispersed rapidly and widely in the im-

mediate aftermath and had not had time or means to advise others of their destination. In Managua an estimated one percent of the population was actually killed in the disaster so some families experienced disruption in their social activities due to the loss of relatives or friends. It can be suggested that the total loss of close relatives or friends may take on an importance out of proportion to the actual numbers of friends or relatives now dead and not included in one's social network. Further study is warranted into this aspect of recovery of social networks after disasters.

Rapid City victim families also displayed a decrease in frequency of visiting. At Time 1 in Rapid City, 41% of the victim families interviewed indicated they visited their predisaster neighbors less, while 9% said they visited their relatives less than before the impact.

Rapid City families, like Managua families, indicated that they were affected by the post-disaster situation of increased physical distances, or increased difficulties in mobility, which resulted from the dispersion of victim families relocated in temporary housing. While Rapid City is not large geographically and transportation is mainly in private automobiles, the elimination of many bridges made cross-town travel a more time consuming affair than prior to the disaster. Forty-two percent of the respondents maintained that two years after the disaster, Rapid City was less easy to "get around in" than before.

A second constraint to visiting in Rapid City had to do with the reduced amounts of free time available to victim families. At Time 1, 32% of the victim families interviewed said that they had less free time than before. Even at Time 2, 31% indicated that they had less free time than before the flood. Thus it appears that the lack of free time, coupled in some instances with longer travel times, resulted in a relatively long lasting reduction in visitation frequencies of victims with friends and neighbors. With respect to relatives, in Rapid City there was only a slight decline in visiting after

the disaster, and most victim families reported normal visiting frequencies with kin by Time 2. This would indicate the greater saliency of kin networks over friendship networks to victim families in the recovery stage.

It might be noted that the same thing should be true in Managua, if not more so, since kin interaction is typically carried on at a very high rate in Latin societies (Carlos and Sellers, 1972). That visiting with kin as well as with friends showed a long-term reduction in frequency may well reflect the serious disruptive aspect of the constraints put on mobility by postdisaster conditions in Managua. In a city with extensive use of mass transit, the postdisaster dispersion of the population coupled with extremely circuitous bus routes, increased fares, and inadequate service in general apparently created a major problem.

Leisure Activities

At Time 2 in Managua, 32% of the heads of household were reported to no longer engage in what had been their favorite leisure time activity prior to the disaster. The most frequent reason given for this was that they could not afford the activity since the disaster. For some, the statement of an economic constraint indicated lack of enough extra money to replace destroyed entertainment items like a television set or stereo; for many it meant the lack of extra money to spend on movie admission, or to eat and drink in the restaurants and clubs being reestablished in the city.

In the Managua Time 1 interview, 45% had reported they did not engage in their favorite leisure activity any longer. At that earlier stage the most frequent reason given for the change was that of a physical one – the disruption of many leisure activities was linked to the physical destruction of the city. It became apparent that once the physical places of entertainment were again provided, this kind of activity was still reduced. Respondents then came to see it as a matter of their own

personal economic constraints. It may also be that in some instances there were more subtle reasons, such as unfamiliarity with the new places, or disinterest in going without former friends.

The major constraint indicated by Rapid City residents was different. As already indicated with respect to visiting habits, the reduction of discretionary time for other leisure pursuits in Rapid City was felt by the victims even two years after the disaster. While many respondents revealed a reduction in the amount of time available for leisure pursuits, when time was available most families (71%) continued to pursue their favorite pre-flood leisure activities. It should be remembered that of those in Rapid City indicating a reduction in the amount of time spent on leisure activities, 77% said it was due to the amount of time expended getting their homes cleaned up and repaired. In-depth interviews disclosed that some families were still cleaning the “residue” of the flood from their homes for up to two years after the disaster.

In Rapid City few commercial sites for leisure activities were destroyed; thus families were not constrained by the lack of physical facilities as they were in Managua. Also reliance on the automobile for leisure meant that victim families could continue to pursue outdoor leisure activities in the nearby Black Hills, away from Rapid City.

Shopping

In Managua, all but one of the traditional open air produce and dry goods market places were destroyed, as were most of the more modern supermarkets. So most families changed where they shopped, thereby losing the feeling of shopping in a familiar place. Those who had shopped in the central market place in the downtown area prior to the earthquake for the most part changed to shopping in the one remaining marketplace

in the eastern part of the city. Almost 40% of the respondents at both Time 1 and Time 2 reported that where they shopped at that time was further from where they lived than where they had shopped prior to the disaster.

Many new and modern shopping centers were built around the periphery of Managua, being ready for business by the end of the first year. For persons with cars and adequate income, these shopping centers may be an improvement over the congested downtown area of prequake days. However, they do not provide the range of goods, opportunity for comparative shopping for produce, and lower prices critical to those with meager resources. Most families continued to do the bulk of their shopping in the open marketplace. This created great inconvenience for the many who lived in the western part of town. Added to this was the extra expense of bus or taxi. With food prices having doubled and even tripled in the fifteen months following the disaster (without concomitant increases in salaries), paying busfare besides could mean not buying meat that week.

Respondents in the in-depth interviews in Managua indicated that having to spend two or three hours to get across town and back necessitated changes in household management and meal planning. For example, shopping trips were made less often (no small issue when one had no refrigerator), or it was necessary to orchestrate activities of others in the household so an adult or older child could be at home with the young children. Thus the constraint of there simply not being several physical locations from which to select a shopping place, added the secondary constraints to recovery in shopping patterns of more time needed to accomplish the task, more familial disruption and some added economic burden.

Unlike Managua, the commercial sector of Rapid City was not heavily impacted in the disaster. As with many North American cities, Rapid City is characterized by multiple super-market-chain store centers. Only one of these

was damaged in the flood and it reopened again after repairs. The net consequence of the distribution of shopping centers was that few victim families reported any change in their shopping patterns. Of those interviewed, 11% had changed grocery stores in the year after the flood. Those that changed did so because they had relocated to a new area of Rapid City and another shopping center was more convenient.

Thus it appears that even though having an automobile meant that families were not necessarily restricted to neighborhood facilities, and there were optional facilities throughout Rapid City, the families seemed to prefer convenience when it came to establishing shopping routines. It is difficult to make this comparison in Managua since those who preferred to shop in the open marketplace had few choices. It cannot be known if those families would have continued to shop in a familiar marketplace (a shopping situation much more personal than a modern supermarket) or would have changed to the one most convenient to their neighborhood.

Life Satisfaction

A feeling of being as satisfied with life as before the disaster was slow in coming to many victims of the Managua disaster. At Time 2, 57% of the Managua families still reported that they were less satisfied with life than they had been before, while 11% reported that they were actually more satisfied than they had been prior to the disaster. As would be expected, significantly and positively associated with regaining a sense of satisfaction equal to one's prequake days were variables indicating the extent of recovery or improvement in family income. Economic constraints affected all areas of life.

In an attempt to get at a somewhat less subjective dimension than satisfaction, Managua respondents were also asked about recovery of their standard of living. At Time 2,

65% said their standard of living was still worse than it had been prior to the disaster. Almost 40% of those blamed their condition entirely on earthquake losses, while another 27% attributed it to a combination of their losses in the earthquake and the high rate at which the cost of living had increased since the earthquake. Twelve percent blamed it only on the rising cost of living.

The item on recovery of standard of living was a fixed-choice one, thus not allowing for elaboration of what “earthquake losses” meant to respondents. Certainly material losses would be the most likely type of loss they thought of. The most salient point made in the majority of the in-depth interviews was the difficulties created by economic conditions and the consequent impossibility of recovering one’s former lifestyle. It is possible that many respondents were still affected by more subtle feelings of loss associated with changes in their physical environment and in the network of relationships. Many respondents in the in-depth interviews commented on the difficulty of getting about the city, on the loss of their homes and friends, and in general displayed distress at the changed nature of their daily lives. For some this was stated in terms of changes brought about by their own physical relocation, for others by changes in a once familiar neighborhood now partially in ruins. They indicated secondary consequences of the economic setback associated with the disaster. For example, some reported avoiding friends because they could not reciprocate appropriately. A few implied they were simply too depressed and tired to care. It is not possible to know if such feelings indicate trauma related to having experienced the disaster impact, or if perhaps such fatigue and depression grow out of contending daily with a largely unfamiliar and frustrating set of physical surroundings and an altered economic situation and social setting.

In Rapid City, in terms of self-reported happiness, at Time 1, 22% of the victims

reported their lives to be less happy than before, while 15% reported theirs to be more happy. By Time 2, there were increases both in the number reporting their lives more happy and in those reporting their lives less happy; the percent reporting their lives more happy changed from 15% at Time 1 to 22% at Time 2, the percent reporting their lives less happy increased from 22% to 28%. Those indicating a decrease in happiness attributed it for the most part to monetary difficulties and unpleasant memories of the flood.

One possible interpretation of this rise in the percentage reporting decreased happiness is that it is a consequence of the family having completed the resettlement process. That is, while they were going about the instrumental activities of finding and moving into a permanent residence, they were still considering their situation to be temporary and in flux. However once that was accomplished and their situation could again be considered a permanent and stabilized one, they had more time to reflect on their personal experiences and hence begin to feel more acutely some of the losses they had incurred, both physical and social. Another interpretation would be that over time they became disgruntled at the way reconstruction was being handled in the community and did not consider the situation in general to be in the process of “normalizing.”

As in Managua, Rapid City families were asked about their standard of living since the disaster and how it compared to their pre-disaster standard. Only 17% of the Rapid City families considered theirs to still be worse at Time 2, compared to 65% in Managua at Time 2. The constraints to recovery in standard of living seemed similar, for Rapid City families indicated that the decline in their standard of living was due to a combination of flood losses and the increased cost of living; this even in a city where many persons received grants and loans to aid in the recovery of housing and possessions.

CONCLUSIONS

In the foregoing we have attempted to document the persistent effects of disaster on visiting, leisure time use, and shopping in two very different disaster stricken cities. While housing may be reestablished, jobs regained and standards of living normalized, the severed friendship networks, the lost familiarity of settings, and the need to reestablish routines affect families. In summary we have considered the effects of disasters on family recovery in terms of the various constraints suggested by findings and in-depth interviews. Constraints here refer to the perceived or real limitations imposed on victims by the consequences of the disaster and the social response to it. As suggested earlier, there appear to be five types of constraints which affect victim families. These are physical changes in the setting, normative demands on resources and behavior, economic demands, temporal demands, and subjective feelings about how things are going.

Physical constraints involve what limitations may be imposed on victim families by the physical destruction of local facilities. Family routines are disrupted due to the loss of local facilities (e.g. theaters, banks, stores, restaurants, schools), by the disruption of access routes, the disruption of urban mass transit, and by destruction of the family's house or even entire neighborhood. The latter is particularly constraining in cultures or subcultures where the home, front stoop, or patio is the general focus of social interaction.

Families may be limited in reestablishing daily routines due to normative or "social" constraints. For example, general normative obligations to kin may result in families spending time and resources on these relationships, thereby slowing down their own recovery process. In Managua it was apparently normative to house, or at least share even meager resources with relatives in the immediate aftermath (Kates et al., 1973). It is normative also that energy be spent to care

for family members disabled by the disaster, and necessary to family stability that the internal family network be repaired when the role structure has been disrupted by disablement or death of a family member.

Besides family network norms, there are linkages with other networks that can create constraints on the recovery process. For example, rather than break perceived norms by participating in the social network without meeting certain unspoken requirements (appropriate clothes, nice enough house, reciprocity in entertaining), families may feel compelled to retreat. They may no longer invite people to their homes, or may no longer engage in other activities which were formerly opportunities for socializing with friends or business or professional associates. It may take some time to reestablish a social life which is compatible with their new situation and which is as satisfying to those involved as the former one.

Economic constraints are a frequent concomitant of disasters, particularly when there is little in the way of community-based aid forthcoming directly to families, as was the case in Managua. Families may lack discretionary funds for commercial leisure pursuits following disaster. They may have to reduce the standard of housing they were used to, or other types of consumer buying. Financial difficulties may result from such things as underemployment, unemployment and the resultant decrease in income, inflation, or to disaster related expenses such as medical care or house rental expense. Paying off a mortgage or credit payments on a house or other possessions that no longer exist can be an unbearable financial burden, and the likelihood of replacing such things under these circumstances is very slim.

Another disruptive consequence of disaster is that the changes in routines take up time. We have labeled these temporal constraints. There are several sources for increased demands on time including increased in-home cleaning

and rebuilding time, search time for new housing or employment, and increased travel time due to spatial relocation and dispersion. Without time for leisure, social activities and the like families cannot reestablish those activities.

The fifth type of constraint identified overlaps somewhat with the others enumerated. These are the subjective constraints, by which is meant how a family defines its current situation and how it is constrained by that definition of the situation. Whatever the objective conditions are with respect to amount of time for formerly routine activities, or the extent to which spatial dispersion creates a barrier to mobility, or even to the amount of money actually available to be spent for other than necessities, families may perceive that the situation is in some way affecting their lives and keeping them from being as satisfied as they were prior to the disaster. Families which are forcibly relocated by a disaster impact or the related policy for relocating persons away from the hazardous area may not resume routine leisure activities because they are in an unfamiliar part of the city. Families which find themselves in an unfamiliar neighborhood may not "feel" comfortable using local facilities, but voice the complaint that there are no adequate local facilities when in fact there are. It may be that there is not necessarily a one-to-one correspondence between the objective situation in the community and how a victim family perceives the situation.

RESEARCH AND POLICY IMPLICATIONS

The central concern here, from the sociological perspective, would be the determination of which of these constraints are related to the social structure in which the family is embedded, and thus are manipulable from the structural level. Relief and rehabilitation efforts in the immediate aftermath of a disaster play an important role in getting a setting established in which families can operate to routinize

their lives again. When families are certain of where they will sleep that night and certain that they will have a meal, they turn to other considerations. One set of certainties builds on another. Routines are established and eventually a family feels things have normalized. This happens in conjunction with things going on at the community level such as physical structures being replaced, and functions being restored. During the rehabilitation phase community leaders may take steps which would be costly to reverse in terms of locational decisions and physical structures. Priorities for long-term reconstruction activities may have been established initially with short-term considerations in mind. Other decisions with respect to reconstruction still remain to be made at the community level, and decision makers do this based on the available resources and their perception of the needs of the community then and in the future. Further research into the interaction of these perceptions and the types of resources and needs actually in existence would be useful for sorting out the extent to which rehabilitation and reconstruction policies alleviate social effects of the disaster and the extent to which they prolong them.

As can be seen from some of the differences between Rapid City and Managua (even beyond cultural differences) the types of problems following a disaster will be somewhat site-specific. The nature of the disaster agent, the extensiveness of the damage, and the amount and type of human and financial resources available for planning and reconstruction affected policy decisions. In Rapid City it was relatively clear which section of town should be cleared for a floodway. In Managua, a decision on which areas to redevelop was more difficult because the entire area is hazardous. Formulation of policies concerning the relocation of facilities (such as the marketplaces), residential areas and where to allow repair and building were slow in coming and caused a great deal of uncertainty for affected individuals.

In both cities it appears that more definite attempts to provide better transportation, even if temporarily subsidized, would have alleviated one of the negative consequences of the relocation of families. In Rapid City no mass transit existed even though some victim families were relocated to the periphery of town. In Managua, the use of buses and taxis is well institutionalized, but no adequate measures were taken to reorganize and regulate the transportation companies in order to compensate for the now decentralized city.

In Managua there were definite indications that early attempts to replace places of entertainment would have given victims some sources of diversion, especially if prices were regulated. This in turn might have helped the morale of many who looked at the leveled downtown area with a sense of despair. Even the early redevelopment of parks would have given families a setting for interaction and the possibility of meeting with friends.

In Rapid City, vast federal resources and clear rules and procedures for their distribution contributed strongly to recovery in that many families received substantial help in recovering losses in material goods, in financing new homes and the like. But still some had a sense of financial difficulty. In Managua, recovery aid from government sources did not seem to be a possibility. As is the norm there, kin helped each other, and consequently none could get ahead of a difficult economic situation.

In both sites, the public provision of temporary housing offered low-rent shelter in the early months. However, in both cities the solution provided also created further disruption to social networks and in the daily activities of persons actually living in these settlements. In some ways these programs retarded the reintegration of families into established neighborhoods.

In conclusion, it is obvious that some social consequences of disasters simply cannot be avoided. The very word disaster

connotes a grave disruption of all aspects of the lives of those directly involved and of the lives of many others. But sometimes it appears that too much concern is given to the physical reconstruction of cities while low priority and little attention are given to "small" things that might be done to hasten the social restructuring of human activities. Further research could determine more specifically which types of recovery aid given directly to families and which types of physical reconstruction can have the most multiplier effects for the social structure and family recovery.

REFERENCES

- Bott, E. (1971). *Family and Social Networks*. New York: Free Press.
- Carlos, M. and Sellers, L. (1972). "Family, Kinship Structure and Modernization in Latin America," *Latin American Research Review* 7(2): 95-122.
- Drabek, T. and Key, W. (1975). "The Impact of Disaster on Primary Group Linkages." Paper presented at the annual meeting of the American Sociological Association, San Francisco, California.
- Foley, D. (1950). "The Use of Local Facilities in a Metropolis," *American Journal of Sociology* 56, November: 238-246.
- Fried, M. (1967). "Grieving for a Lost Home: Psychological Costs of Relocation," in Wilson (ed.), *Urban Renewal*. Cambridge, Mass.: M.I.T. Press.
- Fried, M. and Gleicher, P. (1961). "Some Sources of Residential Satisfaction in an Urban Slum," *Journal of the American Institute of Planners* 27 November: 305-315.
- Haas, J.E., Kates, R. and Bowden, M. (Forthcoming). *Reconstruction Following Disaster*.
- Hunter, A. (1975). "The Loss of Community: An Empirical Test through Replication," *American Sociological Review* 40: 537-552.
- Kates, R. et al. (1973). "Human Impact of the Managua Earthquake Disaster," *Science* 182: 981-990.
- Mileti, D. (1974). "A Normative Causal Model of Disaster Warning Response." Ph.D. Dissertation. Boulder: University of Colorado, Department of Sociology.
- Mileti, D., Drabek, T. and Haas, J.E. (1975). *Human Systems in Extreme Environments*. Boulder: Institute of Behavioral Science, University of Colorado.
- Sheldon, E. and Moore, W. (1968). *Indicators of Social Change*. New York: Russell Sage.
- Suttles, G. (1972). *The Social Construction of Communities*. Chicago: University of Chicago Press.
- Wellman, B. (1973). "Community Ties and Support Systems," in Bourne (ed.), *The Form of Cities in Central Canada*. Toronto: University of Toronto Press.