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RESTORATION ACTIVITIES FOLLOWING THE
IZMIT, TURKEY EARTHQUAKE OF AUGUST 17,
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Introduction

By any standard or definition, the earthquake that struck northwestern Turkey on August 17, 1999 was a major disaster. Measuring 7.4 on the Richter scale, the earthquake was centered near the cities of Izmit, Golcuk, and Adapazari. It damaged or destroyed as many as 100,000 buildings, left hundreds of thousands of people homeless, and, according to official estimates, resulted in the deaths of nearly 16,000 people. The earthquake also had a major impact on large industrial facilities in the region, and estimates of its economic impacts vary between 5 billion and 10 billion U.S. dollars. While preliminary estimates of the economic costs associated with the earthquake vary widely, actual costs will likely be substantial given the sheer magnitude of the event. Because the earthquake occurred in a largely urban and industrialized area, it resulted in widespread physical damage and severe social and economic disruptions.

This paper describes recent activities that have been initiated to restore social routines to the impacted region. While others have described social aspects of the immediate response

¹ This paper is based on observations made by the author as part of a team—sponsored by the Multidisciplinary Center for Earthquake Engineering Research—that visited Turkey from September 28 to October 5, 1999. The author would like to acknowledge the support of the Multidisciplinary Center for Earthquake Engineering Research and the Disaster Research Center for providing funds to travel to Turkey. The observations, views, and opinions expressed, however, are solely those of the author and do not necessarily reflect the views of the Multidisciplinary Center for Earthquake Engineering Research or the Disaster Research Center. The author would also like to acknowledge the generous assistance of several members of the Department of Sociology at Bogazici University in Istanbul, Turkey. In particular, this research would not have been possible without the assistance of Professor Faruk Birtek, Elif Kale, and Ayse Akalin.

period, this paper focuses on the early recovery phase. Beyond their potential for physical destruction, a defining characteristic of disasters is their potential for disrupting routine social functioning. Basic social functions (e.g., transportation, lifeline systems, health care, education, and economic production, distribution, and consumption) are often disrupted when major disaster events occur. Disasters differ, however, in the degree to which they cause social disruptions. For example, some disasters may result in only brief power outages and minimal damage to structures, allowing the impacted community to resume normal functioning fairly quickly. In other cases, a community or one of its segments may go for days or even weeks without electricity and a significant proportion of its building stock may be badly damaged or destroyed. As a result, the amount of time needed to restore daily routines will likely increase.

Regardless of its scale, communities faced with a disaster are also faced with the challenge of restoring social routines and practices that have been disrupted. The amount of time, effort, and resources needed to restore normalcy, however, will largely depend on the scope and magnitude of the event. Photograph 1, which depicts a scene on a busy street in Golcuk, nicely illustrates the restoration of daily routines in that city. In terms of restoration activities following the earthquake, this paper focuses on three basic social functions: (1) housing, (2) education, and (3) health care.

[Photograph 1 about here]

Following an event with such tremendous destructive capacity, it is not surprising that housing is a prominent issue, and it will likely remain a major issue in the coming months with the arrival of winter. The first section of the paper describes some of the major housing issues that arose following the earthquake, including difficulties associated with estimating the number

of homeless, the establishment of large “tent cities” to house those displaced from their homes, and problems associated with tracking the numerous tent cities. This section also describes some of the ways in which residents of these massive tent cities are adjusting to their new living arrangements. In the second section of the paper, the issue of restoring education in the most heavily impacted areas is discussed in some detail. Following the earthquake, officials, particularly those in the city of Golcuk, were faced with the challenge of determining when it was appropriate to resume school and deciding on how best to do that. The third section of the paper describes how some hospitals in the region were impacted by the earthquake and how they responded to it. Because some hospitals in the region sustained extensive physical damage, they were forced to alter their routines for delivering medical services. Those changes are described in the third section. The final section presents a series of recommendations for future research on the social aspects of the earthquake in Turkey. These recommendations are aimed at gleaning lessons from this event that can be used to reduce the impacts of future disasters or improve societal responses to them.

Housing and the Earthquake

During the MCEER team’s trip to Turkey (September 28 to October 5), about six weeks after the earthquake occurred, the most prominent and salient social aspect of the event was housing. Because the earthquake was so physically destructive, it displaced an enormous number of people from their homes, all of whom would need alternative living arrangements. As will be discussed below, however, for various reasons it is difficult to know exactly how many people were left without homes in the earthquake’s aftermath.

Following major disasters like the one in Turkey, the provision of temporary sheltering

and housing is typically a priority in early attempts to restore normal social functioning. While in the first few hours and days after a major event the focus is likely to be on immediate response activities such as search and rescue and the delivery of emergency medical services, the sheltering and housing process also typically begins fairly quickly. In terms of characterizing the social aspects of disasters, housing is a crucial component of the entire process.

For the most part, social scientists tend to view disasters as involving four phases or periods: preparedness, response, recover, and mitigation (Drabek 1986). Preparedness activities are simply those things that individuals, households, organizations, and communities do to get ready for a disaster. For example, an organization may develop a disaster plan and stockpile food, water, and supplies to ready itself for a disaster event. The response phase involves the enactment of behaviors and mobilization of resources in response to an actual event. During this phase, which is also referred to as the emergency period or the crisis period, families assemble themselves, informal groups of neighborhood volunteers launch search and rescue activities, formal emergency organizations dispatch personnel and resources, and lifeline organizations attempt to restore crucial services as quickly as possible. During the recovery phase, communities begin to restore basic social functions and resume daily routines. Typically, this phase involves both short-term (up to six months after an event) restoration activities and long-term (beyond six months) recovery processes. Finally, mitigation activities are community-wide measures taken to reduce the impacts of future disasters. For example, a city may enact stricter land-use ordinances or stronger building provisions.

Clearly, the four disaster phases do not necessarily occur distinctly or sequentially; rather, they usually overlap in important ways (Neal 1997; Quarantelli 1998). For example, a household

or organization may decide to develop preparedness plans only after an actual event occurs, or a community may implement a mitigation measure while recovering from an event that has already occurred. Thus, the four phase model is best viewed as a conceptual tool used to understand the processual nature of human social responses to disaster. In this context, the housing process can be seen as both a response and recovery activity. On the one hand, the provision of immediate temporary sheltering to survivors is clearly a response activity that ensures safety and provides a means of accounting for people. On the other hand, the transition of displaced people from temporary to more permanent living arrangements is clearly a sign of early recovery. In the case of the Turkey earthquake six weeks after the event, the establishment of numerous tent cities can be viewed as an early restoration activity. Some residents are beginning to return to work, and, as discussed below, these emergent living arrangements have evolved into fairly complex social systems that provide many of the essential services of a regular city.

Estimating the Number of Homeless

The task of estimating the number of tent cities that exist and the number of people living in them is extremely challenging. Some estimates suggest that the earthquake destroyed or badly damaged 120,000 housing units, leaving as many as 600,000 people without homes. Other estimates, on the other hand, suggest that approximately 120,000 people are living in 200 tent cities throughout the region. In either case, the number of people left homeless in this disaster is very large, and it will be important to generate more accurate estimates as plans are developed for more permanent living arrangements.

The need for more accurate estimates is heightened due to the fact that winter is quickly approaching. Because most of the tents in which people are currently living are not adequate for

extreme winter weather, plans are being discussed to bring in stronger winter tents and some pre-fabricated buildings. Therefore, in order for officials to make the appropriate arrangements, an accurate estimate of the number of people currently living in tent cities will be necessary.

In many U.S. disasters, it is not uncommon for officials to drastically over-estimate public housing needs because they sometimes do not recognize that many of those who are displaced go to live with friends or relatives whose homes were not destroyed. It is likely that similar patterns are occurring in response to the Turkey earthquake and that these patterns are complicating census-taking efforts. For example, in the mountains surrounding Golcuk and Adapazari, two cities that were very heavily damaged, there are many small villages from which people migrated to live in the larger cities. And many people from other parts of the country that may be much further away have migrated to these more urbanized and industrialized cities to find work. Following the earthquake, it is not known how many people returned to their places of origin to live with friends or relatives and exactly how many people remained in the two cities. It may have been easier for people from the surrounding mountain villages to return home, whereas people from more distant places in Turkey may have been less likely to leave the area after the earthquake.

In either case, officials do know that there has been some migration, but they do not know how much. For example, a health official in Adapazari indicated that prior to the earthquake approximately 200,000 people lived in the center of the city; after the earthquake, this official estimated that only about 50,000 to 70,000 remained in the city. Similarly, an official in Golcuk, which had a population of about 75,000 prior to the earthquake, indicated that about half that many remained in the city after the earthquake.

In addition to internal migration patterns and survivors' reliance on existing social networks of support, there are other reasons why it is difficult to officially estimate the number of people left homeless by the earthquake. For example, another major impediment to obtaining an accurate census is that many people (exactly how many is not known) whose homes were not badly damaged are nevertheless reluctant to reenter their buildings. Since the earthquake occurred there have been several major aftershocks that have instilled hesitancy on the part of survivors.

Additionally, some officials indicated that although several groups and organizations are developing counts for various purposes, they are not coordinating those efforts closely enough. For example, some groups are taking counts in order to make arrangements for the delivery of mental health services, and others may be trying to order appropriate amounts of certain supplies. With so much activity going on, however, it is very difficult for these various groups to collaborate with each other and coordinate their efforts. The result, then, is that various groups and organizations are taking counts for their own purposes, and these numbers are not being shared.

In most disaster situations, research has shown that both inter- and intra-organizational coordination are often difficult to achieve because circumstances change rapidly and because numerous organizations (many of which have no mandate or responsibility for emergencies) become involved in the overall community response (Dynes 1970). In situations where various organizations are not familiar with one another and lack established patterns of interaction and coordination, it is not uncommon for these kinds of problems and issues to arise.

Three Types of Tent Cities

Although it is not possible at this point to know exactly how many tent cities exist and how many people are living in them, it is possible to describe the tent cities and how residents are adjusting to living in them. Basically, displaced people in the impacted area who have not sought shelter in other locations are living in three different types of tent cities: (1) those organized by the military, (2) those organized by non-government organizations and private corporations, and (3) those that are informally organized. In reality, it is difficult to classify individual tent cities because there is some overlap among these general types. For example, a tent city that is organized and run by the military may also offer some services to residents that are performed by a voluntary or non-government organization. Similarly, a tent city organized by a private corporation may integrate non-government organizations into its service delivery system and rely on military personnel to provide security. In a very general sense, however, it is useful to organize the numerous tent cities into these three general types.

In terms of size, the largest tent cities seem to be those that are organized either by the military or by private corporations or non-government organizations. At one of the military-run tent cities in Golcuk, for example, 3,000 people are living in tents that cover a large land area (shown in Photograph 2). Another tent city in Golcuk set up by a large manufacturer in the area houses approximately 3,700 people. Informal tent cities, which are comprised mainly of neighborhood groups living outside in tents near their homes (which may or may not be badly damaged), are scattered throughout the region and tend to be comparatively small (see Photograph 3). It is difficult to ascertain at this point the proportion of people that live in the various types of tent cities and how many of each there are for the same reasons discussed above.

For example, the crisis response center in Golcuk reported the existence of 12 tent cities in Golcuk, but one administrator knew of at least 21 different tent cities. A more accurate count may improve the efficiency and effectiveness of the delivery of needed supplies, and it may ultimately help in the arrangement of adequate provisions for winter.

[Photograph 2 about here]

[Photograph 3 about here]

A more accurate census of tent cities and people living in them would also make it possible to compare the different types along several dimensions. For example, on the one hand, a clear benefit of the informally organized tent cities is that they allow primary social groups (i.e., families, extended families, and close friends) to live near each other and rely on each other for social support. While administrators of the other two types of tent cities have tried to keep these groupings intact, they are less able to do so as these tent cities increase dramatically in size and as space becomes less plentiful in them. On the other hand, the larger military- and volunteer-run tent cities may be able to offer a wider range of services to residents, including large kitchens, pharmacies, counseling services, entertainment, and kindergarten for small children. For example, at one of the large military-run tent cities in Golcuk a civic group from Istanbul (which had no prior involvement in disasters) established and operates a kindergarten for young people.

This involvement of non-emergency relevant organizations in providing services after the earthquake is similar to what occurs in many U.S. disasters, and, as will be discussed in the concluding section of this paper, it is an issue that should be explored further through cross-cultural and cross-societal comparisons of disaster responses. If there are important differences in the type and quality of services offered at the various types of tent cities, and if there are

certain benefits and limitations to each of them, they should be used as lessons for future disasters when mass numbers of people must be temporarily relocated.

Adjusting to Daily Living in the Tent Cities

Following major disasters like the one in Turkey, the establishment of tent cities serves several important functions: it provides necessary shelter from the elements; it re-establishes and reaffirms community and collective solidarity; and it begins to provide a stable base from which people can start to restore their daily routines. In some of the large military- and volunteer-run tent cities, for example, meals are served at certain times each day, residents engage in routine religious rituals and perform basic routines like doing laundry, young people play soccer and attend kindergarten, and some adults leave each morning to go to work. Just across the street from one of the tent cities, a regular market has emerged that provides residents a place to go to purchase basic items. And local bus companies have altered their routes to provide transportation from the tent cities to various points throughout the city. All of these examples illustrate the point that when social routines are severely disrupted, individuals, groups, and organizations improvise and adapt in creative ways as they attempt to restore normalcy to the social order (Bosworth and Kreps 1986; Kreps and Bosworth 1993; Quarantelli 1996; Webb 1998).

One of the most important issues that individuals and families face under these circumstances is the challenge of making a temporary living arrangement into a home that provides all its members with safety and comfort. In a social psychological sense, this means rebuilding or re-establishing an attachment to place that provides security and stability in daily interactions. When a major disaster disrupts a group's attachment to place, its members interact

to develop a new definition of the situation that gives meaning to their experiences and guides them through their interactions with others.

One of the most noticeable things about life in a large tent city is that residents have almost no privacy. In this kind of living arrangement, virtually every aspect of an individual's life is on public display. To minimize or alleviate that problem, residents often adapt in some very creative ways. For example, occupants of a tent will make additions that divide it into two separate spheres: a front area where they can sit and talk with others, and a back area where they sleep and prepare for the day. Photograph 4 nicely illustrates how this is accomplished. In Photograph 5, a tent is shown that is "under construction," and Photograph 6 shows a finished product that actually resembles a small house.

[Photograph 4 about here]

[Photograph 5 about here]

[Photograph 6 about here]

In a sociological sense, these innovations are very meaningful because, although there are important cultural differences, the separation of public and private spheres is a crucial component of social life. In their interactions with others, individuals make decisions about what things to openly present in the front stage region and what things to display only in the back stage region (Goffman 1959). In a very basic sense, for example, houses in many societies are typically designed with a living area intended to be on display to guests and a sleeping area that is typically not openly displayed. By making these kinds of additions to their tents, many of which are fairly elaborate, residents of the tent cities are redefining a fundamental aspect of their social lives.

Residents are also engaged in the process of building new social relationships and a sense of community. For example, as shown in Photograph 7, the residents of a particular row of tents in a very large tent city in Golcuk gave themselves a street name and erected a sign bearing the words "Save Me Street" (translated). This example nicely illustrates how under conditions of extreme stress people rely on each other and the relationships they have to give meaning to their experiences. Similarly, in other cases community members often spray paint graffiti after disasters to express either messages of hope and collective solidarity, discontent with the official response, or simply convey basic information. As shown in Photograph 8, residents of one tent city stretched large white banners across a fence surrounding a playground and painted various things on them, including the slogan "Let's not Forget Golcuk."

[Photograph 7 about here]

[Photograph 8 about here]

These expressions of solidarity and hope may account for some of the debate about the delivery of mental health services following major disasters (Quarantelli 1985). In many U.S. disasters it is often assumed that these services will be widely needed, but in many cases survivors do not seek out that kind of assistance. At some of the tent cities in Turkey there have also been some concerns that residents are not utilizing mental health services to the degree that they should. There may be two reasons why disaster survivors do not always seek mental health services after a major event: first, they may find comfort and support in their interactions with significant others who have also experienced the event; and, second, some of the mental health consequences may not necessarily be negative. As some of the examples above show, when a

community has been severely disrupted, its members rely on existing social relationships and newly formed ones in coping with the emergency and beginning to restore normalcy to their lives. Sometimes disasters may enhance, if only temporarily, the collective solidarity felt by members of a community because they all share a common experience. Clearly, there is a need for more research on the mental health consequences of disasters, and the earthquake in Turkey provides a setting where important cross-cultural and cross-societal comparisons can be made.

Restoration of Education After the Earthquake

Another basic social institution that is often disrupted in a disaster and that must be restored is education. In addition to providing young people knowledge they need to become adult members of a society, schools also serve the crucial function of keeping a substantial portion of a population occupied and on a rigorous daily schedule. When that schedule is interrupted, a certain amount of ambiguity and confusion is created, so officials typically try to resume school as quickly as possible. Their concern is often not only to get students back in school for learning purposes, but also to give structure and meaning to young people's lives in a period of confusion and disruption. The restoration of daily activities, including school for children, is a crucial part of community response to and recovery from a disaster.

The earthquake in Turkey occurred almost one month before schools across the country were originally scheduled to begin on September 15. Schools in many areas did begin as scheduled, but when a major aftershock occurred on that same day all school opening were indefinitely postponed. Ultimately, schools in areas such as Istanbul that did not sustain heavy damage began operations on Monday, October 4. Even that caused some controversy because many parents in those areas did not understand why their children were being held out of school

for so long. In more heavily damaged regions, such as Golcuk, it was hoped that school could begin in early November, significantly later than originally planned.

There are several reasons why the opening of schools in Golcuk was delayed for such a lengthy period of time. First, some of the school buildings themselves sustained heavy damage, so pre-fabricated structures or large tents would be needed to conduct classes. Second, many teachers, students, and parents expressed major concerns about reentering even those school buildings that had not been badly damaged in the earthquake. Finally, in Golcuk it is not known how many students in the area will be returning to school. As was discussed above in relation to housing issues, migration patterns will strongly affect the population of students in the most severely impacted areas, and that will make it difficult to estimate the number of returning students for whom plans should be made. Many students are believed to have returned with their families to either villages in the surrounding mountains from which they came or to more distant parts of the country to live with relatives or close friends. A school official in Golcuk, for example, estimated that only 10,000 of the area's 28,000 students would return to school.

To facilitate the opening of schools in the most heavily damaged regions, the Turkish government commissioned one of the major universities to become involved. According to some of those involved in the project, the commission has two major goals: first, to get an accurate estimate of the number of students who will be returning to school; and, second, to conduct focus groups with teachers, students, and parents to better understand their anxiety about reentering school buildings that were not damaged.

Some school officials, however, indicated that this approach may not be the most efficient and effective way to go about restoring school to the most badly damaged areas. For example,

one official suggested that it may be more productive to establish schools throughout the region in large tents and see how many students report. If the demand were to exceed the number of tent schools established, then additional ones could be set up. This case illustrates that a major disaster can disrupt even the most basic social institutions and that key participants often have differing perspectives on how to respond. In some disasters, such as the recent earthquake in Taiwan, schools resume fairly quickly, but there are certainly times when a prompt restoration is not possible. Thus, there are important lessons to be learned from the recent earthquakes in terms of understanding barriers to the restoration of basic social institutions and identifying strategies that are particularly effective.

Health Care Facilities and the Earthquake

Another basic social function that is sometimes disrupted in major disasters is health care. These disruptions occur either because the number of fatalities and injuries exceeds the health care system's capacity to respond or the health care system itself sustains physical damage which affects its ability to deliver services. In either case, this is another area in which the social system often becomes very flexible and adaptive in meeting heightened emergency demands.

In both Izmit and Adapazari several hospital buildings experienced major physical damage during the earthquake. At a hospital in Izmit, for example, two buildings and the pedestrian walkway connecting them sustained serious damage from the shaking. Immediately after the earthquake, medical staff were forced to evacuate the building and move existing patients outside. As people began bringing the injured to the hospital's emergency department, it quickly became congested and overcrowded. To alleviate the crowding, hospital staff began assembling the injured in a school yard across the street, sorting and tagging them by severity of

injury, and transporting them to other regional facilities. Similarly, existing patients who could not simply be discharged early were also transferred to other facilities.

What is most interesting about this particular hospital is that even 5 weeks after the earthquake, staff still had not yet reentered the buildings. On two occasions they tried to reenter, but when major aftershocks occurred they returned outside. Because they were forced to set up operations in tents in the parking lot (shown in Photograph 9), the hospital has been unable to resume its normal functioning. For example, minor injuries are treated, basic exams are conducted, and medications are dispensed, but it is not possible to perform major medical procedures. This case shows that even emergency relevant organizations such as hospitals can themselves be impacted by disasters, and, when they are, they must become flexible and adaptive under the circumstances.

[Photograph 9 about here]

Similarly, a major hospital in Adapazari sustained extensive physical damage to its buildings. In particular, two of the facilities five buildings were damaged, forcing staff members to move existing patients outside. As was the case in the previous example, existing patients and new arrivals were assembled outside, sorted and tagged by severity of injury, and transferred to other regional hospitals or field hospitals set up by international relief organizations. According to one official, this process created some confusion at the hospital because staff members were not able to document all of the victims who were seen and transferred. The receiving hospitals later created detailed lists and sent them back to this facility, but the delay in that process created some confusion as concerned people came to the hospital looking for their friends or relatives. This official also indicated that for a short period of time there was a shortage of trained medical

staff in the immediate aftermath of the earthquake. That problem was resolved, however, as volunteers quickly began arriving. The same official pointed out that this staff shortage existed in Adapazari even before the earthquake.

While staff members have reentered the facility in Adapazari, the hospital still had not resumed its normal functioning at the time the research team visited. For example, major medical procedures still were not being performed at the hospital, and staff from other cities who came to volunteer were still living in tents in the parking lot. At the time the team visited, the hospital in Adapazari had focused its activities on providing broader public health services. For example, officials began producing and distributing brochures and pamphlets that describe how to treat water, prepare food, and avoid bacterial diseases. In addition, local health officials have been involved in monitoring the city's supply of clean water, much of which was being hauled in by tankers from a nearby lake. One official gladly reported that there have been no major outbreaks of bacterial diseases in the region, in large part because of the activities undertaken by staff members at the hospital.

These examples of hospitals in Turkey highlight two important points. First, they clearly show that health care facilities, which are usually assumed to be operational in mass emergency situations, can sometimes experience physical impacts themselves. And, second, when hospitals are impacted by disasters, their basic structures and functions are often altered to meet heightened demands created by the emergency. Although these alterations and innovations are often functional and adaptive, they may sometimes be dysfunctional and maladaptive. In either case, it cannot be assumed that hospitals will always be operational in the aftermath of a major disaster event. In fact, surprisingly little research has been done that documents exactly how

prepared hospitals are for disasters and how they actually function when disasters do occur. Clearly, this is an area where much more research is needed, and the earthquake in Turkey provides a situation where cross-cultural and cross-societal comparisons can be made in describing and understanding how hospitals function under stress.

Concluding Remarks and Future Research Needs

This paper described some of the early restoration activities following the earthquake in Turkey. In particular, it focused on three essential social functions: housing, education, and health care. In terms of housing, the paper described the difficulties associated with estimating the number of people left homeless by the earthquake, three different types of tent cities that have been established to meet housing needs resulting from the earthquake, and various ways in which people are adapting and adjusting to daily life in the tent cities. The section on education highlighted the importance of restoring education in providing daily routines for young people, discussed several reasons for the delay in resuming schools in the most heavily damaged areas, and described various strategies proposed for restoring education in those areas. Finally, the section on health care facilities focused on two hospitals in Izmit and Adapazari, describing how they were impacted by the earthquake, how they functioned during the immediate response period, and how they are currently operating.

In all three areas, it was shown that disasters have a strong potential for disrupting even the most basic social functions and that the process of restoring those functions can be very difficult and challenging. It was also shown, however, that even under the most stressful circumstances individuals, groups, and organizations can be very creative and adaptive in responding to major social disruptions. Although it can be a long and sometimes controversial

process, most communities do recover from even the most devastating disasters, which underscores the resilience of human social systems under stress (Fritz 1961). Clearly, the topics addressed in this paper point to only the early stages of recovery, and the entire process will likely take a significant amount of time, effort, and resources.

This last section of the paper draws out some of the future research needs that were mentioned in the previous sections and presents others that were not explicitly stated. There are several areas in which the earthquake in Turkey provides a setting in which interesting cross-cultural and cross-societal comparisons can be made along several dimensions. First, at a very basic and descriptive level, it would be useful to do further research on the various organizations that have become involved in the response to and recovery from the earthquake. As was described in the previous sections, various organizations, many of which have no defined disaster responsibilities, have become involved, and many of those that do have disaster responsibilities, such as hospitals, have significantly altered their basic structures and functions. This kind of organizational innovation and adaptation has often been documented in studies of U.S. disasters, so there is a unique opportunity to make comparisons with the situation in Turkey. These studies can either document how specific types of organizations, such as hospitals, responded to the earthquake or focus on the issue of inter-organizational coordination between various types of organizations. This kind of research can be readily translated into lessons learned and ultimately usefully integrated into the practice of emergency management.

The broader issue of social recovery is another area in which important cross-cultural comparisons can be made. Several studies have looked at the process of household (Bolin 1994) and business recovery (Dahlhamer and Tierney 1998; Tierney and Dahlhamer 1998; Webb,

Tierney and Dahlhamer forthcoming) in the U.S., so the earthquake in Turkey presents an opportunity for comparative research. There are several important areas in which the earthquake in Turkey can improve our broader understanding of community recovery as a social process (Nigg 1995). For example, future studies might document the impact of this event on the collective memory of the people who experienced it and assess the degree to which it may or may not affect subsequent mitigation decisions aimed at reducing the impacts of future disasters. Along those same lines, it will be interesting to measure the local, regional, national, and international economic impacts of the earthquake and monitor the progress of economic recovery. As one example of this, officials in Golcuk have already expressed differing views of how best to promote economic recovery--some want to rebuild the existing downtown business district, while others want to relocate it away from the sea and closer to the mountains. These kinds of perspectives and debates will likely intensify in the coming months, and that process should be studied.

In addition to studying the process of economic recovery, there is a tremendous amount to be learned from studying the transition of earthquake survivors from temporary to permanent housing. On a practical level, there are valuable lessons to be learned from this case as officials try to place tens or even hundreds of thousands of people in more permanent living arrangements. And, on a conceptual level, it will be important to understand how individuals, families, and groups construct meaning in their daily lives in the tent cities and beyond and how they re-establish their attachment to place under conditions of such extreme uncertainty.

Future research should also be done to explore the many political implications of the earthquake (Sylves 1998). For example, some commentators have suggested that the earthquake

has promoted a certain critical sentiment among Turkish citizens and that for the first time they are speaking out against their government and criticizing its response to the disaster. Others have suggested that the sympathetic outpouring of international relief reflects improved relations between Turkey and other nations. Whether these changes were induced by the earthquake or simply accelerated by it, the political dimensions of this disaster will also be important to consider.

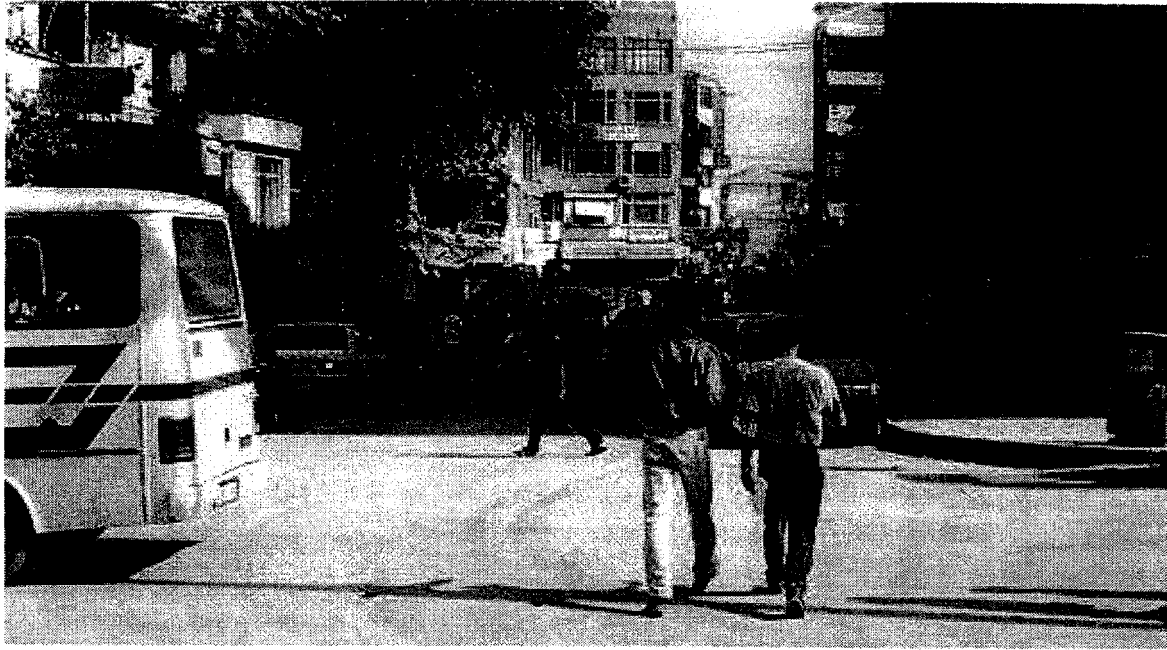
Finally, the recent earthquake in Turkey also provides a setting in which to assess the applicability and utility of advanced damage assessment technologies and loss estimation methodologies. Moreover, there is a need for research that describes what technologies have been employed in responding to and recovering from the earthquake, assesses their utility, and identifies areas in which technologies can be improved to enhance response capabilities.

As shown in this section, there are numerous research needs stemming from the earthquake in Turkey. Whether the knowledge gained from that research is used to promote disaster preparedness, enhance emergency response, facilitate social recovery, or suggest certain mitigation measures, there is a tremendous amount to be learned from this event. Ultimately, the lessons learned from this earthquake should be translated into measures that either reduce the impacts of future disasters or improve societal responses to them.

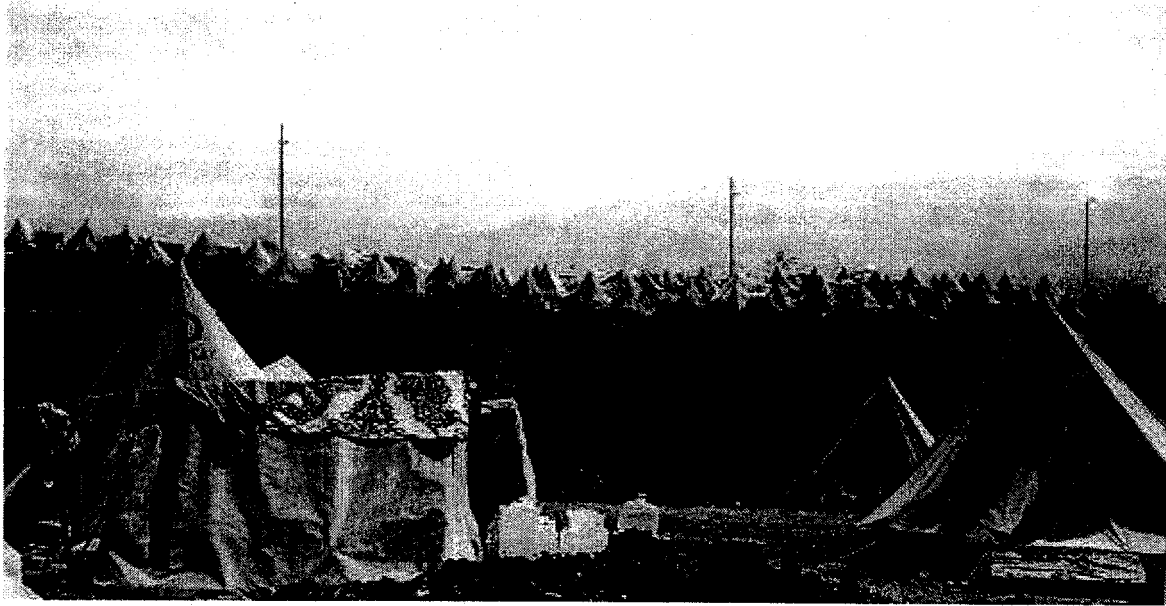
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Photograph 1: Restoration of Daily Activities in Golcuk



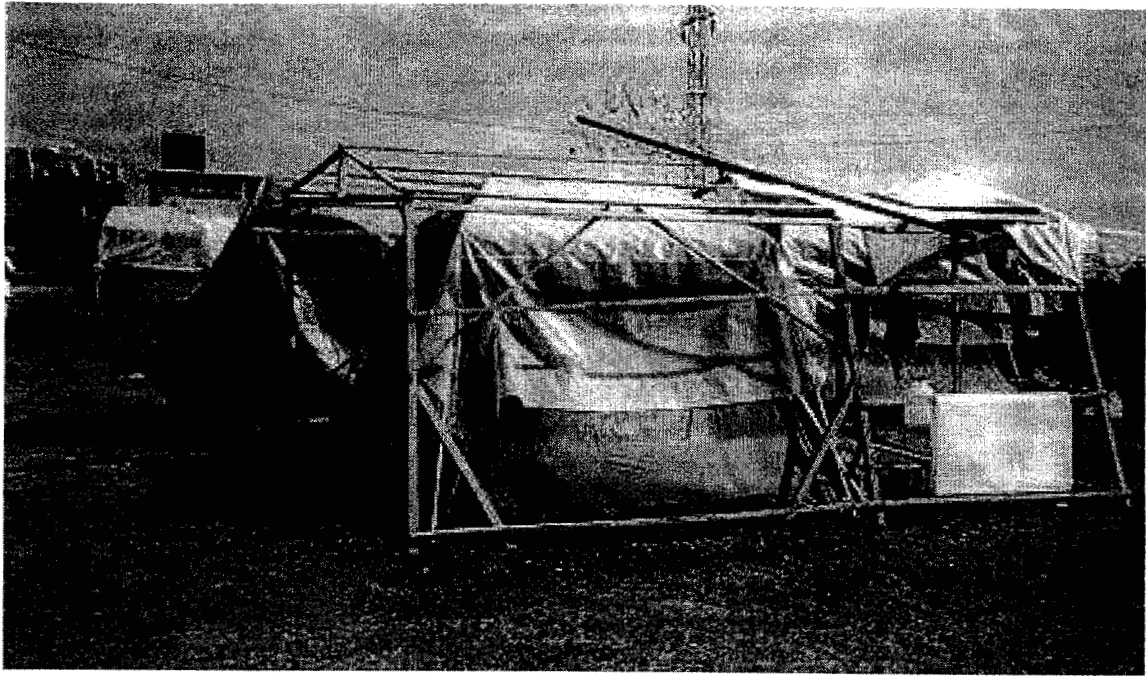
Photograph 2: A Military-run Tent City in Golcuk



Photograph 3: An Informal Tent City



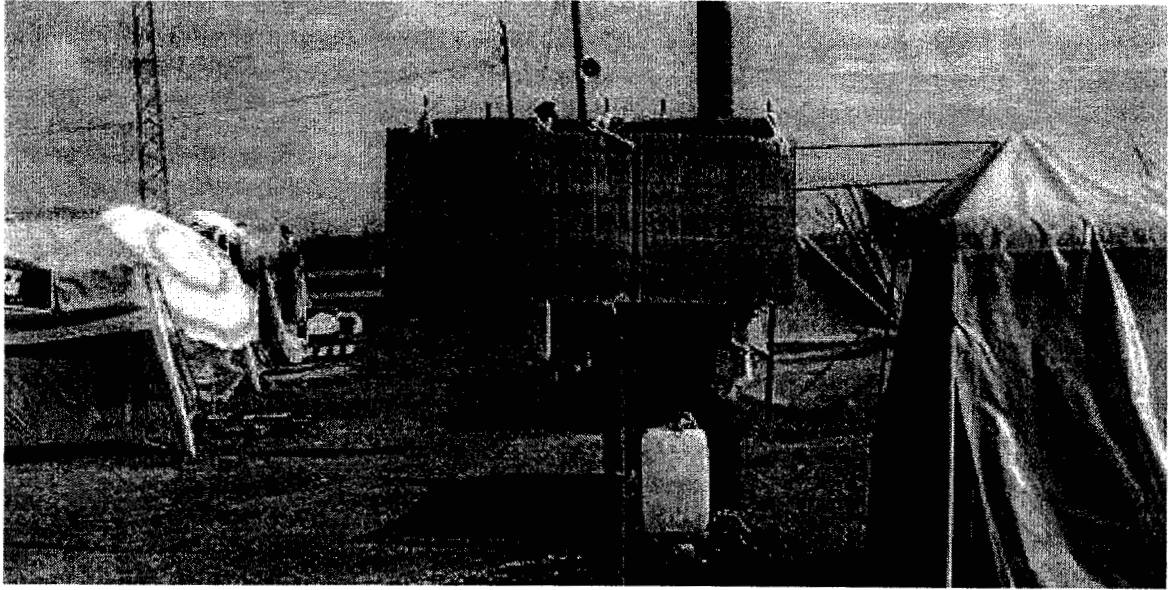
Photograph 4: A “Renovated” Tent



Photograph 5: A Tent Under Construction



Photograph 6: A Finished Product



Photograph 7: A "Street Sign" in a Tent City



Photograph 8: Graffiti in Golcuk



Photograph 9: A Hospital in Izmit