

University of Delaware  
Disaster Research Center

FINAL REPORT  
#35

THE ORGANIZATIONAL AND PUBLIC  
RESPONSE TO THE SEPTEMBER 1985 EARTHQUAKE  
IN MEXICO CITY, MEXICO \*

1988

\* Much of the work reported on in this volume was supported by the U.S. National Science Foundation (NSF) under Grant # ECE-8610904. However, all the opinions, findings, conclusions or statements expressed are those of the authors and the Disaster Research Center (DRC) and do not necessarily reflect the views of the NSF.

## Preface

This is a report summarizing a 24 month project running from June 1986 through May 1988. As such, it emphasizes and highlights the general findings and major themes from our work. Therefore, the report does not pretend to present all the detailed findings from our study or all the special analyses that were done. All the results from this more specialized research effort is provided in other publications that have been or are in the process of being written.

While individual and organizational responses to a major urban earthquake--the prime focus of this volume--occur in all such disasters, the research being reported is nevertheless relatively unique in several respects. First, the research represents one of the few truly cooperative cross-societal disaster studies ever undertaken anywhere by social and behavioral scientists, in this particular instance involving dozens of Mexican nationals and dozens of citizens of the United States. (The specifics of the joint venture are described in the body of the text). Second, systematic social science research in the immediate aftermath of a major earthquake especially in a very large metropolitan area is almost nonexistent (studies following the Alaskan, Niigata, 1971 southern California, Managua, Guatemala, Friuli, etc. earthquakes, were either not systematic, immediate and/or of an urban area--see Quarantelli, 1982 for listing of the work done). This therefore is a rather pioneering piece of work. Finally, some of the research findings--to give a hint of what will be set forth in the pages that follow--challenge some widely held views both about the response in the Mexican disaster itself and how it is thought people and groups will react to an earthquake in a large urban area.

In this volume, we follow standard DRC policies in reporting any descriptions or analyses of our data. Thus, we do not identify particular individuals or officials, and in many cases, not even the specific organizations we looked at in our research. The only exception is when the information about groups or persons has already published by others and is in the public domain.

Our report follows the traditional DRC and scholarly policy of citing references and otherwise documenting what is reported. However, almost all of the statistics and examples used in the volume were computed from or derived from primary data in the DRC files. All unreferenced material can therefore be presumed to have been derived by DRC from its own data base.

This publication, apart from meeting a formal NSF reporting requirement, is intended for many audiences. As a general statement, it is primarily aimed at disaster policy makers, disaster planners, and disaster researchers. While we think what is said can benefit many others ranging from at one end--social and behavioral scientists abstractly interested in responses to collective stress situations--and at the other end--to many operational personnel concerned with the specifics of dealing with human and social responses to earthquakes--some of our other publications more specifically target them as prime audiences.

Part I of the report provides an introduction to the study. It gives a brief overall account of the sociophysical aspects of the earthquake and its impact in Mexico City, discusses how a close collaboration was developed with Mexican colleagues prior to DRC doing any research on this disaster, and indicates the kinds of data that were obtained and how they were analyzed by both DRC staff members and our counterparts in Mexico.

In Part II we use two major population surveys to describe and analyze the behavior of individual citizens after the disaster. The first survey, undertaken less than three weeks after the earthquake, allows us to depict the impact consequences, the mass communication behavior of the victims, their volunteer behavior, and the attitudes and evaluations that the population had about governmental and other impact-related activities. The second survey, done about a year later, permits us to discuss the longer run earthquake problems as seen by citizens, their attitudes about the handling of disaster related problems, and what people learned from the experience of the disaster.

Part III includes our discussion of organizational behavior in the aftermath of the disaster. First we depict the very complex governmental structure in Mexico City and the general lack of prior disaster planning, both of which significantly affected the organizational response to the earthquake. Then we present a picture of the major organizational responses in the first three days after impact, separately followed by a selective depiction of the organized responses of both governmental and private organizations up to the end of the emergency period, approximately a two week time span.

In Part IV we further make explicit the major research findings or themes of our study, briefly examine the extent to which they might be applicable to an earthquake disaster in the United States, and indicate what future research ought to explore.

### Acknowledgements

As with nearly all DRC publications, what is reported represents a collective product. Many staff members at DRC and personnel in Mexico contributed directly or indirectly to the end product.

At DRC much of the initial and some of the later work was carried out by some graduate students in sociology at the University of Delaware. These included Bruce Crawford, Michele DiPalo, Barbara Friedman, Laura Ketter, Sarah Kingsley, Michael Hackett, John Linn, Dorothy Lockwood, Lynn Snowden and James Wright. DiPalo and Friedman also went to Mexico to help in training the Mexican students who were to do the organizational interviews in their own country. What these DRC staff members contributed to the data gathering and analysis are reflected in this report, and we gratefully acknowledge their assistance.

A very important role was also played by Professor Thomas James, a sociology department faculty member at St. Lawrence University, who in 1988 spent part of his sabbatical leave at DRC. While at the Center he undertook much of the actual computer analyses of the survey data, contributing substantively and not just to the statistics in this report. We also want to thank him for his substantial help. In addition, we also appreciate the work of Professor Alan McCutcheon, a staff member of DRC, in initially processing on the computer the survey data the Center obtained from Mexico.

The support staff of DRC also played a crucial role in many phases of the work. In particular Margie Simmons, the Center's Office Coordinator, contributed incalculably to solving many major and minor administrative and logistic problems that often cut across two different societies and various bureaucratic systems. She also supervised in a very efficient way the production of this report. We thank her very much for all she contributed.

We also want to credit several undergraduates who helped with various aspects of the study effort. Among them were Elaine Denning, Michele Klein and Stewart McKenzie.

A special debt too is owed to certain of our Mexican colleagues without whose involvement and assistance, there would have been no data gathered and therefore no study. We would especially like to thank certain persons associated with the Instituto de Investigacion de la Comunicacion and also with the Facultad Latinoamericana de Ciencias Sociales (FLACSO). In the former we would like to name Dr. Jose Ruben Jara Elias, and Alejandro Garnica Andrade. These two researchers were responsible for

supervising the survey data collection and were significantly involved in the construction of the survey instruments. In the latter our thanks goes to Jose Luis Reyna, the Director of FLACSO. In addition, the actual interviews of organizational officials were undertaken by Luisa Bejar, Guido Bejar, and Maura Rubio. They performed admirably in an often difficult research setting.

In addition to these persons, certain officials in the Mexican government were very helpful in trying to provide us with an understanding of their society and their governmental structure. They patiently provided answers to our many questions and offered useful suggestions and ideas on how we might proceed. They undoubtedly prevented us from making some dangerous blunders or errors during the course of our work. Among those we would especially like to thank for their courtesy and assistance are Juan Carlos Padilla of the Coordinador General de Protection Civil, and Julio Margaine of the Secretariate Gobernacion.

Of course these officials are in no way responsible for whatever is expressed in these pages. They had no control over the study, no access to the primary data, and they would have not seen any of the research findings until this volume appeared.

Last but not least, we wish to acknowledge the help of hundreds of Mexican citizens and those officials who provided the primary data for our study. Many while still struggling to recover from the earthquake, took precious time to answer a lengthy survey questionnaire or a long interview guide. We hope that what we have done because of the information they provided will help others to better prepare for and respond to future disasters.

The National Science Foundation provided the funding for the study. Their liaison research officer, Dr. William Anderson was consistently supportive of the work from its inception to its conclusion. As usual, the foundation and its staff made no attempt to influence the research in any way but simply indicated that high quality scientific work was expected. Such kind of unrestricted support is not true of all agencies in all places, so we wish to express our appreciation for their traditional policy.

As will be detailed later, Russell Dynes and Dennis Wenger had the most initial contacts with Mexican counterparts that led to the development of the DRC research proposal. Wenger also headed the DRC group that went to Mexico City for about 10 days to train the Mexican interviewers on the field techniques and research operations of the Center. He and Dynes also undertook additional trips later to ascertain the quality of the data being obtained and to learn about the initial impressions and observations that were being made in the field. Dynes also provided most of the liaison with other researchers in the United States who were doing studies of the Mexican earthquake.

The bulk of the data analysis done for this report, building on initial analyses carried out by the persons mentioned earlier, was undertaken by the undersigned three DRC directors. This written version produced from the data analysis is also a collective product. However, to the extent that there was a division of labor in the writing of drafts, Quarantelli had the major role in writing the initial version of Part II, and of chapters 1 and 3 in Part I as well as chapters 9 and 11 in Part IV. Wenger mostly drafted Part III, chapter 10 in Part IV, and chapter 2 in Part I. Dynes provided general input for Parts III and IV.

Finally, since ours was the final decision on much of the data gathering and on all of the data analysis and report writing, any faults, shortcomings and errors in this volume are our responsibility alone.

Russell R. Dynes, DRC Co-Director  
E. L. Quarantelli, DRC Director  
Dennis Wenger, DRC Co-Director

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## PART I: INTRODUCTION

In this section we present the background of the study, its historical development, and the nature of the data we obtained and used.

### Chapter 1. Background

Mexico, and especially parts of the metropolitan area of Mexico City suffered a major disaster in late 1985. The interaction between two tectonic plates generated a great deal of accumulated energy which was released in two earthquakes, one on September 19, and the other on September 20 (but, we will not distinguish between the two earthquakes in the rest of this report). The first registering 8.1 on the Richter scale occurred at 7:18 am; the second registering 7.5 on the scale at 7:38 pm happening about 36 hours later while rescue work was still going on after the first earthquake.

While the epicenter was about 230 miles away, the greatest impact was in Mexico City (Esteve, 1988), although the physical damage was concentrated in relatively few localities where site conditions and buildings were particularly sensitive. One estimate was that the directly affected neighborhoods involved only 3.2 percent of the federal district (Terremotos 1985 Mexico, 1986:7). Also, the metropolitan zone emergency committee in a statement issued a month after the disaster said that over 90 percent of the entire heavy damage to buildings was concentrated in but three wards (delegacion) of the area. However, as we shall document later, there was social disruption and indirect effects in much larger parts of the metropolitan complex.

Mexico City is subject to numerous seismic shakings with one survey indicating that there are an average of 90 a year that register 4 or over on the Richter scale (Herrera, 1986). In fact, in the 45 days following the September earthquake, there were at least 150 tremblors that ranged from 3.5 to 5 on the scale (Terremotos 1985 Mexico, 1986:2). Major earthquakes have happened in six years in the last 150--in 1845, 1859 (which may have been the strongest of all), 1911, 1932, 1957 and the one in 1985; the first one recorded in historical chronicles occurred as far back as 1637.

The metropolitan area is especially vulnerable for several reasons. For one, since Mexico City was a town built in the Aztec era above Lake Texcoco (and which existed until the start of this century), many parts of the area--especially the old city--now rests on extremely weak, insecure ground. Also, increasingly there is more to impact in the 890 square mile area. The number of inhabitants has grown dramatically, possibly tripling in the last two decades (Terremotos 1985 Mexico,

1986:7). Census figures are not totally up to date, but it is probable there are between 18-20 million residents, over a fifth of the country's population. An indication of the size of the city is that the subway system carries about 4,850 000 passengers every working day!

Even two years after the disaster, exact statistics are lacking as to deaths, injuries, building and property destruction, economic losses or whatever usually could be measured. Now the earthquake in Mexico was probably not as absolutely or relatively disruptive or damaging as the Tangshan one of 1976 in China (where over 275 000 persons died) and perhaps not even the Chilean earthquake of 1985 (where over 400,000 persons were made homeless), neither of which got anywhere near the mass media or world attention that happened in Mexico. Yet without doubt the Mexico City earthquake of 1985 was a major disaster if the varying estimates which have been projected are anywhere near correct. Thousands of persons were killed and tens of thousands were injured. At least a hundred thousand building units, mostly residential ones, were damaged in some way. Hundreds of thousands were made homeless. Tens of millions of dollars were lost in the tourist trade. Billions of dollars worth of material damage was done. Most of the important federal government buildings, many financial and industrial offices, key communication centers, and the largest central district hotels were in the major impacted zones. In addition, 30 percent of hospital beds in the city were lost as well as 22 percent of school facilities, and more than 10,000 shops and factories were affected (Mendez, 1986:25).

By these criteria what happened was a major disaster if not a catastrophic one. Certainly the largest urban complex in the world suffered many tangible and intangible negative effects. This report partly attempts to document some of them and particularly the reaction of Mexicans and their organizations to the occasion.

## Chapter 2. History of the Study

As was the case for many in the world, DRC heard of the first earthquake via mass media reports on September 19, 1985. Although none of the Center's projects at that time allowed for cross-societal research, the media stories were monitored as a matter of standard data gathering for an obviously major disaster. Although on site data collection was not possible, DRC began to compile a file of mass media reports on the earthquake.

The Center's involvement in the earthquake became more direct in two days when Alejandro Garnica Andrade, a research coordinator with the Instituto de Investigacion de la Comunicacion, arrived at DRC. The Instituto is a survey research center associated with TELEvisa, the major private sector television and radio organization in Mexico. The research coordinator had been dispatched to DRC by his center to gather information on organizational and individual responses to earthquakes. He remained at DRC for three days and spent many hours talking with the directors and utilizing the Center's library resources. His interest partly stemmed from the fact that the Instituto was considering undertaking a survey on the reactions of the population in Mexico City to the earthquake.

Upon his return to Mexico City, the Instituto did undertake a survey of a random sample of its residents. Using in part some of the ideas obtained in the visit to DRC, data were gathered on a wide variety of earthquake related questions and issues. (More specific details of the actual questionnaire used in the survey are presented later). Since the field work was completed about three weeks after the earthquake, the study probably represents one of the very earliest, systematic, and large scale population survey ever done after a major disaster.

Shortly after this first visit from Mexico, DRC was again host to another Mexican visitor. Julio Cesar Margain of the Secretaria de Gobernacion arrived at the Center and spent four days consulting with one of the directors and using the library facilities. Since the Secretaria had been given important functions in the post earthquake period, he had been sent to discuss disaster issues with the staff.

Upon his return to Mexico, the Secretaria invited one of the DRC directors to come to Mexico City and to consult with the government on post earthquake issues. Dynes went to Mexico and advised the Secretaria on a variety of disaster related matters, including possible legislation to establish a national system of civil protection. In addition, Dynes made contact with numerous high ranking Mexican officials involved in the post earthquake recovery effort.

Early in January, 1986, the possibility of DRC doing actual on site research on the Mexican City earthquake was created when the National Science Foundation (NSF) announced that funding was being made available for study on this specific disaster. At DRC it was realized that an unusual opportunity existed for undertaking something that was very rare in social science disaster research, namely, a cross-societal study involving collaborators from two societies.

A proposal was developed that had two foci. First, it was proposed that DRC examine the response of various disaster relevant organizations during the immediate post impact period. Research of this nature had been a central focus of DRC studies for over twenty years. Second, we thought advantage could be taken of the post impact survey that the Instituto had undertaken. It was proposed that the original survey data be examined more intensively, and even more important that a second follow up survey be undertaken a year later, thus adding a longitudinal component to the research effort.

The proposed effort would clearly necessitate not only joint or common work with Mexican researchers but also the cooperation of the Mexican government. Therefore in January 1986 Dynes and Wenger went to Mexico City to discuss the proposed research with various Mexican officials and scholars. A meeting was first held with Juan Carlos Padilla, who had just been appointed Coordinador General de Protection Civil, the new national level disaster planning organization. He was very helpful and supportive of the proposed research. At his suggestion, a discussion was held with Professor Jose Luis Reyna, the Director of the Facultad Latinoamericana de Ciencias Sociales (FLACSO) concerning possible collaboration on the organizational part of the proposed work. At the meeting in which members of his faculty took part, it was agreed that FLACSO and DRC would undertake a joint research effort focusing upon the response by the Mayor's office in Mexico City and other important organizations in the first two weeks following the earthquake. Part of the agreement also was that the research would be truly collaborative, including the joint production of the study design and field research instruments. It was additionally agreed that the interviews would have to be conducted in Spanish by representatives of FLACSO, and that DRC would provide some training for the interviewers regarding problems and procedures in doing organizational research. All of the obtained data were to be jointly owned and available for analysis by both FLACSO and DRC.

With regard to the public survey portion of the proposed research, two of the DRC directors met with Dr. Jose Ruben Jara, the Director of the Instituto de Investigacion de la Comunicacion, and Alejandro Garnica Andrada. Here too, an agreement to collaborate was reached. It was agreed that DRC could have access to the survey data results that had been

gathered in the first population survey by the Instituto. In addition, it was decided that the Instituto would undertake a second survey, approximately a year after the first one. This second study would reask some of the same questions used in the first survey but would include additional questions on disaster recovery, thus adding a longitudinal component to this part of the study also. There was agreement that DRC could provide suggestions on the questions to be asked and added in the second survey, but that the actual data collection would be done solely by the staff of the Instituto. In this instance, there was the understanding that the obtained data were to be jointly owned and available for analysis by both DRC and the Instituto.

After this visit to Mexico, DRC submitted its proposal (after a review by the Mexican collaborators) to NSF. While the proposal was being reviewed by NSF, Juan Carlos Padilla visited DRC. He came to the Center in his new capacity as the general coordinator of the new Mexican national system of civil protection. Extensive discussions were held regarding general issues of disaster planning and preparedness and specific concerns centering around possible alternative structures for the new organization. The three day visit was mutually beneficial but was particularly useful in familiarizing the DRC directors with certain aspects of Mexican society and disasters in that country.

With the awarding by NSF of the research grant to DRC, actual work on the project began in the summer of 1986. Certain planned collaborative activities were initiated. First, Professor Jose Luis Reyna of FLACSO visited DRC for one week. During this time he presented the Center with valuable information about the structure of the Mexican government and the emergency response pattern. In addition, a draft of the interview guide that would be used with organizational respondents and informants was constructed. (Additional revisions of the guide were subsequently discussed with FLACSO).

Second, Dr. Jose Ruben Jara and Alejandro Garnica Andrada also came to DRC for a week visit. There was discussion of the first survey undertaken by the Instituto and a presentation of the design and questions that might be used in the follow up survey. At the conclusion of the week, the research design and questions were finalized.

Data collection on both portions of the study was begun in October. Four staff members of DRC went to Mexico City and helped train the Mexican interviewers on DRC field techniques and research operations. This training period lasted for a total of ten days. Some of the initial interviews were conducted jointly by both DRC staff members and FLACSO personnel.

Juan Carlos Padilla also substantially assisted the research effort. For example, he called a meeting of various Mexican

officials whose organizations had been involved in the earthquake response. Representatives of DRC and FLACSO were also present. After a discussion of the proposed organizational research, a request was made that the officials present cooperate with the research effort. After that meeting the interviews with organizational officials began.

Around the first year anniversary of the earthquake, the second survey was carried out as planned. The data were compiled, coded, put on computers, and sent to DRC by the end of 1986. Data analysis on this part of the study began in the following months.

For reasons to be discussed in the following section, the gathering of the organizational data and its analysis took longer and proved to be more difficult than originally envisioned. A series of additional trips were taken to Mexico City by the DRC directors and staff in connection with the organizational portion of the study. A total of four trips were undertaken to collect the interviews that had been finished, to debrief the Mexican interviewers, and to discuss the progress and problems of the project.

### Chapter 3. Data Obtained and Used

With the assistance of our Mexican colleagues, DRC obtained three major sets of primary data. The Instituto de Investigacion de la Comunicacion carried out two population surveys. The first was done with minor DRC input. We did discuss and suggest some of the questions for the second survey. The Instituto after coding the answers to the mostly open ended questions in the surveys, provided DRC with computer ready disks of the completed data sets. Although some analysis of the frequency distributions was done in Mexico, the statistical analyses reported in this volume were done by DRC personnel.

In addition, La Facultad Latinoamericana de Ciencias Sociales obtained over three dozen in depth interviews of organizational officials who played major roles in the disaster. DRC drafted the initial interview guide, provided field training in Mexico for the Mexican students who actually conducted the interviews, and recommended who should be interviewed in which organizations. The Spanish language recorded tapes were translated in the United States under DRC supervision and their analysis was solely done at the Center.

The two population surveys undertaken by the Instituto de Investigacion de la Comunicacion differed from one another in some respects. (See the appendici to this report for the English language translated copies of both survey instruments). The first survey was conducted during the first week of October 1985 when 567 respondents from the general Mexico City area were contacted. All those interviewed were 16 years of age or older, and the sample was stratified with respect to gender, age, and socioeconomic status. (The more technical aspects of how the sample was actually drawn, how weights were assigned, and such technical matters will not be discussed in this volume but will be presented in some of the more specialized articles which will be written from other analyses of the data). The sample is statistically representative with a margin of error of three percent. Topics covered in the survey included: how well the government handled a dozen major earthquake related tasks such as search and rescue, the feeding of victims, the sheltering of the homeless, and the providing of information, etc.; usage of the mass media and attitudes about the reporting of the disaster; perceptions and evaluations of the actions of the Mayor's Office, the military, the police, the President of Mexico, and volunteers following the earthquake; disruptions of services and damages to homes as a result of the disaster; what earthquake occasioned problems should have priority for action; and what kind of volunteer work the respondent did in the trans- and post-impact period of the disaster.

Also, each of the 567 respondents were treated as informants for certain purposes. They were asked to provide information on earthquake-related activities of every member of their household. Therefore, information was available on the extent and nature of volunteer activity for a total of 2,965 individuals. The usual demographic survey background items were obtained for all respondents.

The 1986 survey while it repeated some of the questions asked in 1985 differed in the following respects. A total of 749 persons, sampled in the same way as indicated for the earlier survey, were interviewed. Topics covered included the following: the longer run problems brought about by the earthquake; whether the respondent provided and/or obtained housing and sheltering as a result of the disaster as well as the nature and duration of that kind of assistance; perceptions and attitudes regarding how the government generally and specific agencies (e.g., the police, the telephone company, the Red Cross, the Health Secretariat, the Social Security Institute, the fire department, etc.) had handled earthquake related problems; what had been individually learned from the experience and the knowledge that existed of disaster planning; comparisons of the handling of immediate post impact earthquake problems and later ones; evaluations of earthquake related tasks such as the handling of foreign aid assistance, the reconstruction of hospitals and schools, the restoration of the water service, the demolishing of damaged buildings and the clearing of debris, the providing of shelters and housing for the victims, etc.; the nature and duration of any volunteering action undertaken; and some of the consequences of the earthquake on preexisting social problems in the capital, as well as the usual demographic survey background items.

The two surveys did not present any unusual research problems, especially since the Mexican organization doing the field work was highly experienced in conducting market studies in the metropolitan area of Mexico City. The sampling procedures differed somewhat from what is most familiar in the United States (for example, a weighting in the samples towards the higher socioeconomic levels of Mexican society), but were logical and quite reasonable for the situation. The coding of certain answers to open ended questions and some of the categories used also reflected the Mexican sociocultural scene and were valid within that framework, even though researchers in the United States might at times have proceeded in slightly different ways. But on balance these were minor matters, and we feel rather confident about the quality of the survey data; it is as good as survey data can be for the kind of study that was undertaken.

However, the obtaining of the organizational data was more difficult and presented a number of complex problems of sampling and entry that were not easy to resolve. Three difficulties in particular might be noted. They did affect both the quality and

the quantity of the data we obtained.

1. For one, there is the very complex and complicated governmental structure that exists in Mexico City. It is the capital city and as such there is a federal or national presence starting at the top with the President of Mexico. But just as the President of the United States has little to do directly with the governing of Washington, D.C., the President of Mexico while having a more important role in Mexico City, is not involved with the day-to-day operations of the capital city. That is the responsibility of the Mayor's Office.

The Federal District of Mexico City (DDF) and Washington, D.C. are similar in that they are both federal districts. However, the complexity of the former is far more significant than the latter. The Mayor or Regent of Mexico City is appointed by the President of the country. The "Mayor's Office", furthermore, is far more complex than its counterpart term denotes in the United States. For most purposes, the "Mayor's Office" is synonymous with the entire local governmental structure. Under its domain are such varied components as police and fire operations, water, sewer, transportation, communication, health, social security or welfare activities, streets and construction, and civil protection. In addition, the federal district of Mexico City is subdivided into 16 subareas (delagaciones in Spanish). Within these sixteen areas there is considerable autonomy and control of the various metropolitan governmental functions. Therefore, on a normal, daily basis, the structure of local government illustrates the dialectically posed forces of structural concentration and operational decentralization.

In actual fact as we found out in our study, the response of the Mayor's Office to the earthquake indicated even more complexity than the official, formal structure of the organization might indicate. Because the federal government is located within the city, there was overlap of local and federal responses. Furthermore, various other national level organizations such as PEMEX (the national oil company), and many private organizations were also involved in the response. The multiplicity of organized entities operating at different levels presented serious problems for our data gathering efforts.

Given this complexity and our limited resources, we had to restrict our organizational sample to only the very most important of the groups. Therefore, the research design involved starting with core or centrally involved organizations and "snowballing" the sample as information became available about the activities of other organizations.

2. The second problem we had in obtaining data about organizational activities in the earthquake had to do with the matter of gaining entry and cooperation from relevant

organizational officials. Although our joint study with Mexican researchers was very strongly supported from its initiation by high national officials in the Mexican government and some of the key bureaucracies, this did not always provide ready access or cooperation. (This of course is hardly unique to Mexico as DRC can attest from its own organizational studies in the United States). Although most organizations presented no problems, there were a few that were reluctant to participate in the research even when they were promised anonymity. Data therefore was not obtained from the all the groups that we originally designated for study. Also, in one instance only the top official in a key organization could be interviewed even though it would have been desirable to have obtained information from other officials in the group. While we generally got some data from almost all organizations in which the study had an interest, the coverage was not complete.

3. The third problem is the rather familiar one encountered in almost any cross-societal study. The interviews were recorded in Spanish and thus had to be translated into English so they could be analyzed by DRC personnel. (An edited version of the two interview guides used for organizational personnel is presented in the appendici). There were a number of difficulties in the process. It was not easy to find competent translators at least at the hourly rates the Center could afford to pay. The dozen or so translators we used varied rather widely in their skills as we found when we had several interviews independently translated by two different persons. Although we used some Mexican nationals as translators, few of our translators had much prior knowledge of the governmental structure in Mexico City and therefore they sometime missed more subtle points in the comments of some of the interviewees. Finally, it took far more time for a translation to be well done than we had estimated so that not all of the interviews were eventually translated. Because of these problems with regard to translations, the quality of the data was not as high as would have been desirable, and there was even a quantitative shortfall.

Nevertheless, we did obtain formal interviews with over 20 representatives in various subunits of the Mayor's Office (what we shall later call the DDF) involved in such varied tasks as central policy formation, public information, urban planning, medical services, public works, hydraulic systems, urban systems, transportation, legal services, utilities, morgue operations, the office of civil protection--which oversees police and fire operations--and from representatives of various delegaciones within the larger office, as well as activities which developed in the aftermath of the earthquake such as listing missing persons. In addition, another 17 interviews of a formal nature were conducted with representatives from PEMEX (the Mexican national petroleum company), Cruz Rojas (the Red Cross), unions of hospital workers and tenants, and federal agencies including

the military. In a number of these organizations selected documents and after action reports were gathered in conjunction with the interviews.

Our Mexican colleagues were helpful in one particular respect so as to partly counterbalance the problems we have just indicated. They provided a very extensive all day briefing on the general impressions that they themselves had obtained from the interviews they had conducted, to one of the DRC principal investigators on the project who went to Mexico City. The usefulness of the briefing was enhanced by their ability to set their observations within the larger context of their familiarity with Mexican society, the governmental structure, and the earthquake itself.

Besides the survey and organizational data, DRC obtained relevant information from a variety of other sources. With the help of our Mexican colleagues, we were able to acquire a number of Spanish language publications on the earthquake, some of a popular nature but some done in a social science framework. In addition, the Center collected whatever English language reports it could find on the earthquake; eventually we had about four dozen such items. This set of material proved very useful for background purposes.

## PART II: INDIVIDUAL BEHAVIOR

In this part of the report we present the findings we obtained in analyzing the data from the two population surveys.

### Chapter 4. The 1985 Survey

In this part of the report we present our major survey findings about the behavior of individuals in the Mexico City earthquake. We first selectively present results from the 1985 survey study. (See Appendix for 1985 survey questions). Four topics are discussed:

- (1) Impact consequences;
- (2) Mass communication behavior;
- (3) Volunteer behavior; and,
- (4) Attitudes and evaluations.

The logic of the presentation is that the residents of Mexico City were first directly impacted by the earthquake. In addition to this experience they may have learned from the mass media certain information about the disaster. Both experiences may have influenced the volunteer behavior of some of the population. In turn, the experiences of impact of exposure to mass media accounts and of volunteered behavior, may have affected what residents perceived and thought of various persons and groups primarily in the governmental sector who responded in the aftermath of the earthquake. As we shall see, only some of these logical possibilities were borne out by the empirical data.

After this presentation, major findings from the 1986 survey are presented. The logic of that analysis will be presented later.

#### Impact Consequences

##### a. Overall direct effects.

How much damage and disruption did the earthquake occasion? Such figures as have been reported elsewhere are in almost all cases estimates drawn from limited samples, selective cases, and in many instances just "educated and uneducated guesses" from knowledgeable as well as nonknowledgeable public and private sources. (see various sources cited in the U.S. Embassy report compiled by Bohlen, 1986; and those in Hobeika, Ardekani and Martinez-Marquez, 1987:2-3). Our survey data, while not perfect, is rooted in a random sample of the population in the way indicated earlier.

The metropolitan area of Mexico City was not physically

devastated by the earthquake as any observer on the scene could see, even though a headline in the September 20, 1985 issue of US Today said "much of capital in ruins" (p. 7A). Nevertheless, even the physical damage seems to have been somewhat more extensive than might have been indicated by the considerable public attention given primarily to but a very few downtown neighborhoods where some government buildings, several hotels and a few large apartment houses, were laid waste and around which much visible search and rescue took place. In fact, other researchers have noted that while Mexico City may have lost less than two percent of its housing stock, probably two thirds of all buildings which were damaged or destroyed were residential (Pantelic, 1988). Among our survey respondents, 22.6 percent reported some damage and 4.9 percent said there was great damage to the building in which they lived. While the cumulative percentages of affected buildings is a minority of all the structures, the figure of about a quarter of residences suffering some damage from the earthquake translates into several hundred thousand residential structures. (There are over two million buildings in the city).

Published estimates of 30,000 dwellings badly damaged, and 60,000 partly damaged (Mendez, 1986:25) would appear to be somewhat underestimations of actual losses. Even far more inaccurate were early published figures that "In Mexico City, 5728 buildings were damaged, of which 954 collapsed, 2177 suffered fractures or structural damage, and the remainder suffered minor damage" as cited in the U.S. Embassy report (compiled by Bohlen, 1986:2), or the metropolitan zone emergency committee who reported a month after the disaster that there was a total of 5,728 buildings damaged including 3,745 residences. Our findings are more consistent with an engineering report that said "virtually every building in the city suffered some form of foundation failure" (Chandler, 1986).

An examination of how many residences suffered some disruption of services of utilities, indicates how widespread was the earthquake impact. The water supply was interrupted in 39.9 percent of all residences. While slightly more than half (51.8 percent) of our households had no phones prior to the earthquake, about 16 percent of those who had prior service underwent disruption of their phones. Again these percentages translate into very large absolute numbers. They are also higher than published estimates of a 27 percent cutback in the water supply and a 5 percent disruption of local telephone services (from different sources cited in Hobeika, Ardekani and Martinez-Marquez, 1987:2).

We combined these and other kinds of impact consequences into a victimization index. Basically we combined damage to house, interruption of electric, water, and telephone services (leaving out those households who lacked any of these services prior to

the earthquake), and weighted them a in way so that damage to residence counted more than slight disruption of any of the various utility services. The end result was a threefold scale: major victimization = considerable or severe damage to house plus across-the-board disruption of all utility services; moderate victimization = slight damage to house plus disruption of at least two utility services; and no victimization = was all respondents that did not classify as major or moderate.

The overall results show that while 45.1 percent of our survey respondents could not be classified as earthquake victims according to our index, 49.4 were moderate victims and 5.5. were major victims. That roughly translates to at least one million residents of Mexico City suffering major direct earthquake impact. Viewed another way, about 10 million inhabitants of the capital of Mexico were directly impacted by the earthquake. To look at only the relatively few neighborhoods in the center of the city where there was massive physical damage and destruction, misses the disruption of social life which occurred community wide.

Furthermore, our index in no way measured other very disruptive effects. For instance, family life was disrupted for many families because of destruction and damage to over 22 percent of the elementary educational facilities which left hundreds of thousands of children without schools (United Nations Economic Commission, 1985:10). There were socioeconomic disruptions as the result of the unemployment of over 150,000 workers who lost their jobs because of the earthquake (Mendez, 1986). There was the disruption of governmental functions and services in that over 125 buildings either owned by state institutions or rented by them were totally or partly destroyed and had to be evacuated; these included the headquarters of the Ministries of Commerce and Industrial Promotion, Labor, the Navy, Agrarian Reform, and Communication and Transportation, among others (United Nations Economic Commission, 1985:11).

But even just confining ourselves to damage to residence and/or interruptions of certain household utility services, our data show that more than half of the residents of the city were directly affected by the earthquake. To be sure, because of the vastness of the metropolitan area of Mexico City, there were inhabitants who did not become aware for up to 12 hours that an earthquake had happened. However, in terms of the personal disruption of everyday life, a majority of the population, in the millions, were directly impacted to some degree.

Unfortunately for technical reasons the information we obtained on deaths and injuries among the surveyed households can not be fully accepted at face value. However, our data suggest that a total casualty figure of around 130,000 may be reasonable (with the great majority of the injuries being very minor; this is

consistent with some reports that at least 53,000 persons were treated at on-site first aid stations and other facilities). Deaths probably did not constitute more than ten percent of the overall total. Published estimates and some official reports of the dead have given inconsistent figures ranging from 4,000 to 30,000 (Lopez and Lopez, 1986) and even higher unofficial figures of 45,000 dead (Hamilton, 1986: 6); the higher figures are almost certainly incorrect. Nevertheless, as others have noted, the loss of life given the physical damage was both percentage wise and in absolute numbers, surprisingly low (Palacios et al., 1986:279).

#### b. Social class differences.

The direct effects of the earthquake were not equally socially distributed. According to our victimization index, while upper class (UC) respondents suffered the least, middle class (MC) persons were more affected than working or lower class persons (LC). For example, 7.7 percent of our MC sample scored high on our victimization index compared with 4.2 percent of our LC individuals. In terms of being moderate victims, there again was more MC than LC affected, the respective figures being 60.5 percent to 45.8 percent.

Some of these social class differences, although not all, spill over into who suffered disruptions of certain services. While electric power and phone interruptions more or less cut across social class lines, considerably more MC (53.5 percent) than LC (34.9 percent) respondents had disruption of their water services while only 5.8 percent of UC individuals reported they had such interruption.

It is often said that LC segments of a society suffer most in disasters. This is only partly supported by our findings. At least as measured by the indicators we could use, there were proportionately more MC victims than LC victims in the Mexico City earthquake (While we do not report other figures here other variables often correlated with socioeconomic levels such as education and occupation are consistent with our finding of social class differentiation in impact consequences, whereas sex and age variables normally not correlated did not show any significant differences). Of course, since the LC strata is bigger than the MC one, in absolute numbers there were more lower class persons affected directly by the disaster than middle class individuals.

There are at least two possible explanations for the relative greater MC losses reported in the disaster than for our LC respondents. Unlike in certain places around the world where, for example, lower socioeconomic strata persons live in flood plains or near active volcanoes, there was little in Mexico City to push them into the earthquake prone areas. In fact, given the

ecological and land use patterns of Mexico City, middle class persons were more likely to reside near the cultural, social and political centers of the city which as it turned out were nearer or on the ancient lake bed which appears to have amplified the intensity of the ground shaking and increased the duration of the shaking at the time of impact (see the discussion in the special issue of Networks Earthquake Preparedness News, 1986:3).

Also, it is possible that the survey results obtained may partly be an artifact of the situation involved--many LC strata persons in Mexico City had very poor housing on an everyday basis, living in dilapidated structures or buildings. The earthquake may not have noticeably created new cracks in the walls, sagging floors, or making doors or windows illfitting, whereas such damages would have been far more noticeable in the normally better kept houses of MC individuals. Also, while we have no direct data on the matter and its possible influence, supposedly there was a pre-earthquake deficit of 60,000 housing units in the city, (Pantelic, 1988) presumably involved people from the lowest socioeconomic strata.

#### Mass Communication Behavior

Although Mexico as a whole is a developing country, the population of metropolitan Mexico City has substantial access to mass media outlets. In our sample, about two thirds (67.1 percent) had at least one black and white television set and 41.1 percent had at least one colored TV set. (In the survey a year later, 77.8 percent reported owning a black and white set, 41.7 percent a colored set.) Normally there are seven television stations operating in the city. Radio sets are so widespread that ownership is seldom enumerated in surveys. Listeners have at least 57 stations available to them. There are also over two dozen newspapers available, although functional illiteracy may be as high as 20 percent. While some private television stations were knocked off the air by the earthquake, most stations generally continued to transmit.

##### a. General usage.

Everything considered, there was heavy usage of the mass media. On the day of the earthquake only 37.2 percent did not listen at all to a radio station (some of this probably is accounted for by the nearly 5 percent of the population whose residence suffered great damage and some more also lost electric power). While three stations each drew more than 10 percent of the listeners, all stations had some audience. Somewhat more surprising over half (54.7 percent) watched television sometime the day of the earthquake. In contrast to radio listening, it is noteworthy that nearly half of the viewers (49.7 percent) watched one TV channel and another 6.8 percent watched it in addition to another

channel. Not unexpected, only 16.4 percent read a newspaper that day; this may not be far from the daily norm.

Of those that listened to radio, 28.7 percent said they listened in total more than eight hours that day. In fact, but 29.2 percent of the listeners said they heard radio broadcasts only two hours or less. Of those that looked at TV, 27.5 watched eight or more hours! Newspaper readers spread themselves over many papers not particularly concentrating just on two or three.

b. Attitude toward television.

Viewers of television were asked their views of the coverage of the earthquake. About a fourth (25.7 percent) of the survey population characterized the coverage as incomplete but nearly a third (32.3 percent) thought it was complete and the rest fell in between. Barely 15 percent of our respondents thought that the coverage was sensationalized in any way. Only about 28 percent indicated that the TV telecasts failed to provide much guidance or direction. Our survey respondents made little distinction between the coverage by the private and by the government television networks.

There were almost no social class differences regarding the incompleteness of the TV coverage. Similarly there were no clear cut significant differences in terms of such variables as gender, age, marital status and similar demographic dimensions; the same was true with respect to our victimization index. In fact, about the only difference on the completeness of TV coverage of the earthquake was with respect to usage of TV; less frequent users as compared to moderate and high TV users thought the coverage was more incomplete (40 percent versus 29 and 27.9 percent).

UC respondents did see TV as being slightly more sensationalized than did MC and LC persons. So did men as well as those who were most victimized. However, because so few saw TV coverage as being sensational, the figures involved are quite small and probably not significant. LC and UC respondents also did see television as being more directive, that is, providing guidance, than did MC individuals, but here too the numbers involved are rather low.

Women compared with men as well as younger respondents also saw television as being more directive but the differences again were not substantial. However, interestingly, more of those who were most victimized saw the television coverage as providing more orientation than those who were only slightly victimized or not victimized at all (respectively, 38.3 percent compared with 25.9 and 22 percent). This would seem logical since such persons would presumably need the most guidance.

It is perhaps significant that at the time of the survey, about two weeks after the earthquake, nearly a third (31.8 percent) of the respondents said they would just as soon hear less news about the consequences of the disaster. This could be interpreted in a variety of ways. But this along with the other matters we have just discussed would suggest that on the whole, viewers were not dissatisfied with how television reported after the earthquake. Even when asked what more information they wanted to know, and although about two thirds of the respondents mentioned something, few things were particularly singled out and only two questions received more than ten percent mention (16.6 percent wanted to know if there might still be survivors and 14.9 percent wanted to know what was going to be done with the homeless). Those respondents most victimized by the disaster did not appear to have a different set of attitudes about television coverage as a whole, than did non-victims.

c. Mass media usage and other behaviors and attitudes.

Victims were somewhat more likely to listen to radio rather than to watch television after the earthquake. For example, high post-impact radio usage was reported as follows: non-victims according to our index (36.6 percent), moderate victims (51.1 percent), and major victims (12.6 percent). Television usage was respectively 46.8 percent, 42.8 percent, and 10.4 percent. Other data indicate that radio was the major source of information for more than 60 percent of our respondents.

There was a somewhat curvilinear relationship between mass media usage and negative attitudes toward government organizational activities after the earthquake. Low and high media users tended to be more positive whereas moderate users were more likely to have an unfavorable view. For example, low media users and high media users evaluated the actions of the Mexican military more unfavorably (15.7 percent and 32.4 percent respectively) than did moderate media users (51.9 percent). Similarly, with respect to appropriateness of police actions; the respective percentages were: low users (16.3 percent), high users (33.5 percent), and moderate users (50.2 percent). With regard to how poorly governmental agencies performed inspection of earthquake damage to houses, the percentages were for low users (12.1 percent), high users (37.0 percent), and moderate users (50.9 percent).

An examination of mass media usage found no direct relationship to degree of volunteerism. That is, heavy media users for instance were not necessarily high on volunteering. In fact, low media users (52.1 percent) were more likely to volunteer than high media users (38.9 percent). Perhaps this simply means that respondents who were involved in doing emergency tasks had less time to hear, see or read mass media accounts of the disaster.

## Volunteer Behavior

The popular wisdom holds that the "mass assault" during the earthquake was of immense proportions. Mexican officials and the general public have pointed with pride and outside observers with a degree of amazement at the presumed outpouring of volunteer activities in the immediate post-impact period. This massive voluntary effort seemed to be verified by the sights and sounds of television news tapes; around the world viewers saw at least scenes of extensive and long lasting search and rescue efforts.

How accurate is this image of massive volunteerism? The answer depends on what one takes as the base for the answer. As can be observed in Table 1, of 2,966 individuals about whom we have information from our survey, 290 or 9.8 percent engaged in some kind of volunteer action at some time during the nearly three weeks subsequent to the disaster impact. Conversely, 90.2 percent of the sample undertook no disaster related tasks or volunteered in any way.

On the one hand, the image of massive citizen emergent actions seems to be questioned since only about one in every ten residents of Mexico City participated. But it is necessary to consider the population base of the metropolitan Mexico City area. If that is taken into account, 9.8 percent translates into over 2,000 000 volunteers (and depending on what is taken as the actual population of Mexico City, the figure may be over three million), a rather massive response by any standard! It should be noted, furthermore, that these statistics refer to the total population of Mexico City and includes all age categories. If children under the age of 12 are excluded from the sample, the subsequent percentage of those volunteering rises to 12.4 percent, or almost one of every eight adult residents.

Table 1: Factors Related to Volunteering				
	Volunteers		Non-Volunteers	
	N	%	N	%
Total Sample	285	9.8	2,637	90.2
Gender (a)				
Male	192	13.2	1,259	86.8
Female	93	6.3	1,378	93.7
Age (b)				
Under 12	3	0.5	642	99.5
13-17	28	6.2	431	93.8
18-29	136	17.3	650	82.7
30-44	77	14.7	450	85.3
Over 44	40	7.9	461	92.1
Location (c)				
Far	155	7.6	1,883	92.4
Middle distance	84	14.6	490	85.4
Near fringe	34	15.1	193	84.9
In damaged zone	11	13.7	71	86.3
Socioeconomic status (d)				
Upper class	57	25.7	165	74.3
Middle class	129	11.7	978	88.3
Lower class	98	6.2	1,494	93.8
a) Chi square=38.66879			Total N=2,922	
b) Chi square=137.31914			Total N=2,918	
c) Chi square=34.89207			Total N=2,921	
d) Chi square=92.13635			Total N=2,921	

Published reports that volunteers numbered around 50,000 (Hobeika, Ardekani and Martinez-Marquez, 1987:3 citing a Japanese report about volunteering in the immediate aftermath of the earthquake) would appear to have underestimated the total given that 41.9 percent of our respondents who volunteered said they worked at search and rescue. In fact, practically every estimate on volunteering which tried to attach numbers to the activity, fall considerably short of the figures we found. The highest we found was "one million volunteers" (Perez, 1986:3).

#### a. Kinds of volunteer activities.

A wide range of different tasks were undertaken. They ranged from search and rescue and debris clearance to collecting food,

other supplies and money, to transporting goods and material. Other volunteers served as translators for the foreign relief workers, helped to inspect buildings, provided psychological counseling, donated blood, assisted security personnel, and provided various kinds of medical help. Still others opened their homes to victims forced out of their own residences.

For analytical purposes, the full range of activities have been collapsed into seven categories as shown in Table 2. From this it can be seen that most volunteers either engaged in search and rescue, or helped in the procurement and processing of supplies. A little more than 75 percent of all volunteers undertook these tasks. Some help in providing medical aid and psychological counseling was given by nearly eight percent of the volunteers. About four percent either provided transportation or assisted in the collection of money for victims. Another three percent helped to house and shelter evacuees. The remaining ten percent engaged in a broad range of different activities, none of which individually involved more than 1.8 percent of the volunteers.

Table 2: A Comparison of Volunteering By Gender

Tasks	Men		Women		Total	
	N	%	N	%	N	%
Search and rescue	98	52.3	19	20.5	117	41.9
Provision of supplies	49	26.2	44	48.6	94	33.5
Medical/psychological aid	11	5.9	11	11.9	22	7.8
Transportation assistance	8	4.2	3	2.8	10	3.7
Shelter and housing aid	3	1.5	6	6.2	8	3.0
Collecting of funds	3	1.6	2	2.3	5	1.8
Other assistance	16	8.4	7	7.8	23	8.2
Totals=	188		91		279	

Chi square=31.86

The great majority of volunteered tasks involved more than minor expenditures of time. Nearly half or 45.2 percent of the volunteers worked at least four days or longer. A relatively substantial number, 17.6 percent spent at least 10 days or longer on earthquake related tasks. In terms of daily time, 44.9 percent of those who volunteered said they had worked at least an average of nine hours a day, and 22.1 percent claimed that they had put in an average of 17 hours each day (some tasks such as housing evacuees in one's own home could be seen as round the clock or 24 hours a day work).

b. Characteristics of the volunteers.

In the Mexico City earthquake, it was sometime said in certain political circles, in some press accounts, and in popular discourse that the typical volunteer was a resident of the impacted area, poor, male, and young (for the last, see the United Nations Economic Commission, 1985:6). Our data indicates that this impression is wrong in many respects.

By far the greatest number (46.2 percent) of volunteers came from MC households; another 19.8 percent of our respondents who volunteered resided in UC homes. In contrast, only 34 percent were from the lowest socioeconomic strata.

Likewise, only 4 percent of the volunteers were from immediately devastated neighborhoods with another 12.3 percent from nearby fringe areas surrounding those zones. A majority, 54.4 percent resided far from the centers of destruction. This observation applies to volunteering as a whole; some specific tasks such as the providing of supplies appear to have been more neighborhood based. There was no direct relationship between distance from impacted neighborhoods and search and rescue, but the picture is confounded by the fact that no differentiation was made in the survey between earlier and later search and rescue (there is reasons on other grounds to think that the great majority of the early search and rescue was undertaken by those in the immediate neighborhoods impacted; see, for example, the case material presented in Durkin et al, 1987:10).

As to age, only about in ten of all volunteers were 17 years or younger. This too challenges the general impression. In fact our data is only supportive of the idea that volunteers were primarily male; about two of every three volunteers were men.

If we confine our analysis to the smaller individual sample (n=527) we had rather than the household sample (n=2,966), the same general pattern is present. Men volunteers outnumbered women about two to one. Those within the age category of 18-29 were the most numerous with those below 18 years being the fewest. Those residing further away from impacted neighborhoods were more likely to volunteer than those closer to or within those areas. The only noticeable difference in pattern was partly with regard to socioeconomic status. UC respondents volunteered more than MC ones (37.8 percent versus 22.0 percent) with LC individuals being the least likely to volunteer (at 11 percent). Thus, the overall pattern of the smaller individual sample continued to challenge popular notions that volunteers were poor, the young, and from within impacted areas.

c. Background factors related to volunteering.

Using the larger sample again, we found socioeconomic status was positively associated with volunteering. Among the UC, 25.3 percent participated although we shall later note that this is differentiated with respect to the task involved. Whereas only about 11.8 percent of the MC respondents volunteered, even less (6.2 percent) of LC individuals undertook volunteer tasks (this is significant-- $\gamma = .431$   $P = <.001$ ;  $r = .158$ ,  $P = <.001$ ).

Gender also makes a difference overall. About 13.2 of males engaged in volunteer disaster tasks. Only 6.4 percent of females volunteered ( $\gamma = .382$ ,  $P = <.001$ ).

Age is also significantly related to volunteering. But the relationship is curvilinear. The lowest range of participation was among those 17 years of age or younger; 11.3 percent of them undertook any disaster-related tasks. However, participation increased dramatically among those 18-29 years of age; 48.1 percent of the individuals in this age category volunteered. Volunteerism was also above average for those 30-44 years of age. About 26.6 of such individuals volunteered. Finally, the rate of volunteering decreased for those over 44 years of age. It drops to 14 percent which however is somewhat above that for the youngest age category in our sample.

Except for those who lived a great distance from the destroyed neighborhoods, distance (as it was estimated in the survey) is not a significant differentiating factor. For those who lived in impacted neighborhoods, near those areas or at a moderate distance, between 14.7 and 15.9 percent volunteered. Among those who lived far from any of the devastated localities, 7.5 percent participated in some volunteered task.

In general, volunteering was concentrated most among the UC and the MC, young adults to middle age, male persons, and those that resided in or relatively close to impact zones.

In addition, while there was no significant relationship between occupation and volunteerism, there was a partial positive one between education and volunteering (see Table 3 ). Those with an incomplete secondary education or less volunteered at rates between 4.1 percent and 10.6 percent. However, among those with complete secondary education or preparatory education (either complete or incomplete) the range was 17.7 percent to 33.9 percent. Those with professional and post graduate training volunteered between 27.7 to 65.1 percent.

In order to determine the independent effects of gender, social class, age, location, occupation and education upon volunteering for earthquake related tasks, a statistical regression analysis was performed. Thus, we found that volunteering is related to social class and education, although the latter appears to be the stronger independent influence. Similarly, gender is strongly related in that men were more likely to participate at the rate of about two to one more than were women. Finally, age is a statistically significant factor.

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Table 3: Comparisons Of Volunteers and  
Non-Volunteers By Educational Levels

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Educational Level	Volunteers	Non-Volunteers
	% N=93	% N=434
No schooling	4.1	95.5
Primary, incomplete	10.1	89.9
Primary school complete	5.2	94.8
Secondary, incomplete	10.6	89.4
Secondary school complete	17.7	82.3
Preparatory, incomplete	25.1	74.9
Technical	20.7	79.3
Professional, incomplete	33.8	66.2
Professional school complete	27.7	72.3
Post graduate schooling	65.1	34.9
Total =	17.6	82.4

Chi square = 43,30088

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Although there was participation from all social classes and social categories examined, volunteering was most likely to be found among those with substantial education, among those from the higher socioeconomic strata, among males, and among those 18-44 years of age.

Clearly there was differentiation in volunteering. It did not occur across the board. This shows up when looking at volunteering in general. But was there any differentiation in different kinds of volunteer activities? It appears that there were factors which influenced participating in different earthquake related tasks.

What influenced who did what? Social class was a factor. Among UC volunteers, only 24.6 percent undertook search and rescue, while the corresponding percentages for MC and LC volunteers were 38.4 percent and 56.6 percent respectively. Conversely, UC individuals were more likely to volunteer for the processing of

supplies (41.3 percent) than were those from the MC (38.4 percent) or the LC (22.6 percent). The overall relationship was statistically significant (Chi Square = 22.47563 df=12 sig.=.0325).

However, the strongest observed relationship was between gender and type of volunteered activity. The results are presented in Table 2. Men were significantly more likely to engage in search and rescue and debris clearance than were women (52.3 percent as opposed to 20.5 percent). On the other hand, women were more likely to be involved in the collection and processing of food, clothing and other supplies (48.6 percent as compared with 26.2 percent of men). Part of this would seem to be reflective of traditional sex role patterns in a Latin American culture, although some of it might also result from the manual labor requirements of much debris removal and search activity.

A regression analysis was carried out in order to examine the influence of gender, age, socioeconomic status, occupation, education, and location via-a-via the most impacted localities within the city, upon the type of help provided by the volunteer. We found no strong, independent and statistically significant relationship to the type of disaster task undertaken.

#### Attitudes and Evaluations

##### a. Problems.

While respondents in the survey mentioned many issues that they thought the Mexican government ought to address immediately after the earthquake, only two problems were mentioned by ten or more percent of those answering. Nearly forty percent (38.3) singled out most of all the problem of housing the homeless--which a number of all respondents (21.1 percent) thought preexisted the earthquake but was magnified by the disaster. Trailing far behind as the second most mentioned problem was the lack of water and other services in some neighborhoods (13.3 percent).

Given what might have been expected because of the magnitude of the disaster, and also in view of some very public and strongly expressed criticisms (which in part took the form of street demonstrations), the survey findings are somewhat surprising. A more frequent singling out of a number of earthquake related problems might have been anticipated. (That the findings are not a function just of the fact that the population survey was done within the first three weeks after the earthquake, is supported by the observation that a year later, relatively few problems still were mentioned--as we shall discuss in the second section of this part of the report on the 1986 survey results).

There were no social class differences in the focus on the two mentioned problems. But those who scored highest on our victimization index particularly saw the problem of housing the homeless as important (66.1 percent to 36 percent for all others). This is hardly surprising since the most victimized were those who had suffered as a minimum, considerable damage to their own homes. Mass media exposure did not seem to have any direct effect on singling out the homeless problem except for those who thought television coverage was sensational, were more likely to do so.

Given the relatively few problems that were singled out, it is not surprising that overall there was a generally positive assessment of governmental actions (or at least absence of much negative criticisms); of our respondents, 46.3 percent were positive, 47.5 percent were neutral, while only 6.2 percent were negative. Given mass media reports and specific criticisms of particular groups, both Mexican and foreign, this might seem to be a very low figure. Here again, a very low percentage figure translates into large absolute numbers--over a million residents in the Mexico City area had primarily negative views of the immediate post impact response to the disaster. But from a statistical viewpoint, nevertheless, the great majority of Mexican citizens were not critical of what the government had immediately done generally in responding to the disaster.

#### b. Assessment of five key groups.

We examined how our respondents assessed five of the principle responders in the aftermath of the earthquake: the Mayor's office (DDF), the army, the police, the President of Mexico, and the volunteer groups. (Apparently as to the last, no distinction was made in the survey between foreign and domestic volunteers).

Overall what stands out is the general favorable assessment of all the entities--groups or persons. As the following table shows, in general terms, even the most unfavorable viewed group, the army or military, received a 64.1 percent positive evaluation. The most positively viewed were the volunteer groups. Even when the responses were broken down into different dimensions such as appropriateness of response, its timing, how organized, and if it was done in a compassionate way, the great majority of our respondents in all cases were positive or favorable. In fact, as Table 4 shows, the evaluations of specific dimensions did not vary very much from the overall attitude expressed about the responding entities.

Table 4: Negative Attitudes Toward Different  
Activities of Responding Entities

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	%
The police: Overall negative evaluation	35.9
Acted in a nonhumanitarian or noncompassionate way	35.7
Acted inappropriately	35.9
Acted in a disorganized way	35.8
Timing of actions were poor	32.5
 The military: Overall negative evaluation	 32.1
Acted in a nonhumanitarian or noncompassionate way	33.8
Acted inappropriately	35.9
Acted in a disorganized way	30.1
Timing of actions were poor	30.0
 DDF: Overall negative evaluation	 17.0
Acted in a nonhumanitarian or noncompassionate way	17.3
Acted inappropriately	20.6
Acted in a disorganized way	20.3
Timing of actions were poor	18.3
 President: Overall negative evaluation	 10.5
Acted in a nonhumanitarian or noncompassionate way	9.2
Acted inappropriately	14.4
Acted in a disorganized way	12.5
Timing of actions were poor	11.1
 Volunteers: Overall negative evaluation	 5.2
Acted in a nonhumanitarian or noncompassionate way	6.0
Acted inappropriately	6.1
Acted in a disorganized way	11.0
Timing of actions were poor	7.7

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Clearly the two most negatively viewed groups were the military or army, and the police. They were just about the only organizations who were specifically named by respondents who volunteered names of who acted badly (over one in ten mentioned one or both of these groups). For example, 35.7 percent of our respondents saw the police as being noncompassionate or not humanitarian in their response to the disaster; 35.8 percent perceived them as being disorganized; 32.5 percent thought their timing was poor, and 35.9 percent saw them as not acting in

appropriate ways. There was a high correlation between having an unfavorable evaluation on one dimension and on other dimensions. The expressed views about different dimensions of the actions of the military was almost as unfavorable as that about the police. There was however a substantial drop regarding specific negative views of the DDF, the President, and especially the volunteers.

#### c. Background factors.

A variety of simple and complex analyses were made of various background factors which might have influenced attitudes towards the five entities for which an evaluation was requested from respondents. Because of the relatively few negative views that were expressed overall, almost all the cell numbers involved are very low and not subject to any reliable interpretation. But to the extent we could make any analyses such factors as age, education, gender, occupational status, socioeconomic category, mass media usage, degree of victimization, etc. did not seem to be the prime factors in affecting the unfavorable attitudes expressed.

We particularly attempted to analyze what might be associated with negative attitudes toward the two organizations that were most critically viewed, that is, the military and the police. There were some slight tendencies for men more than women, and LC respondents more than MC ones to be negative on certain matters. For example, 36.1 percent of men compared with 28.1 percent of women viewed the military negatively. Also, heavy media users (45 percent) compared to light media users (27.6 percent) were negative of the military. Not surprisingly those with a more general negative attitude toward what the government had done after the earthquake, tended to be somewhat more negative with respect to specific activities by specific entities. But even these figures might represent more normal sampling fluctuations than actual differences. Overall figures tend to support this interpretation. For example, 31.1 percent of LC respondents, 33.1 percent of MC and 33.9 percent of UC respondents viewed the military in a negative one--essentially there were no social class differences. The negative views of the police are about the same with the respective percentages being 34 percent, 38.4 percent and 35.1 percent.

Those who volunteered did not generally have a more negative attitude than those who did not, with respect to the military or the police (or the President of Mexico). This might suggest that contacts with the police and/or military in the aftermath of the disaster as could possibly have been the case by volunteers, did not affect the evaluations. On the other hand, volunteers did have a significantly more negative view (at the .01 level) of the Mayor's Office than did nonvolunteers. This suggests that contact with the group might have affected the attitudes of the

volunteers. Not surprisingly, volunteers had more favorable views of volunteer groups than did nonvolunteers.

But overall, whatever was responsible for the differences in positive and negative evaluations of what we studied, was not particularly accounted for by what we examined. The reasons for the differences laid in other than the primarily demographic dimensions that were available for us for examination. We suspect that the negative views about the military and the police may have resulted more from pre-disaster attitudes rather than a reaction to what those two organizations may or may not have done after the earthquake.

## Chapter 5. The 1986 Survey

In this part of the report we present our major survey findings obtained a year later, that is, around the anniversary of the disaster. As in the 1985 survey, the 1986 one focused on the behavior of individuals. While a few questions were repeated from the earlier survey (and practically all the background questions), most of what was asked was new (see Appendix for 1986 survey questions).

Three topics are selectively discussed:

- (1) Longer run earthquake problems;
- (2) Attitudes about the handling of earthquake related problems; and,
- (3) Learning from the earthquake.

The logic of this presentation is as follows. It was assumed that the population had views about the shorter run problems that emerged as a result of the disaster and/or the longer run problems that appeared. Given these views about problems, we wanted to analyze their attitudes on how earthquake related problems were handled. In turn, we were interested in seeing what those who had undergone the earthquake thought they had learned from the experience, both in the short run and the long run.

### Longer Run Earthquake Problems

#### a. Disruption of utilities.

Many had indicated disruptions of utility services immediately after impact. Similarly, our survey respondents said they had difficulties in the same services in their homes in the year following the earthquake. For example, when asked directly if there had been problems, 31.9 percent of them reported interruptions or cuts in the water supply, 24.4 percent in telephone service, 22.3 percent in electric power, and 8.1 percent in mail delivery. LC and MC respondents had had considerably more difficulty with the water supply than UC ones (respectively 31.4 percent, 33.3 percent and 12.5 percent). However, it is very important to note that when allowed to volunteer or choose themselves what earthquake occasioned problems they experienced over the year, very few singled out problems in such service deliveries. For example, no one mentioned as requiring immediate attention the disruption of electric power, and only one percent mentioned the phone service and but 3.4 percent difficulties with the water service!

In fact, the government was ranked very high on its handling of two of the interrupted services: thus, 56.6 percent thought the restoration of phone service was handled very well or well--only 3.3 percent thought it was handled very poorly; 54 percent said the restoration of the water service was handled well or very well with only 1.6 percent saying it was handled very poorly. The telephone company itself also received high ranking as to how well it was organized and how much it was compassionate, and a clear majority (53.2 percent) said it was better organized a year later to handle a future disaster. Clearly service disruptions of the kinds indicated were not a major source of complaints or dissatisfactions. That problems with any of the utilities was not something that particularly disturbed victims is perhaps also indicated by the fact that those who suffered the most disruptions were no more likely to have participated in disaster-related activities in the year after the earthquake than those who had no such problems.

It is also possible that the disruptions were not that important in the thinking of most residents, possibly because residents of Mexico City are used to some irregularities in such services. In fact, in answering several different questions our respondents tended to observe that the earthquake had made pre-impact problems worse more so than that they created new ones (15.3 percent explicitly volunteered this idea, and 85 percent of our respondents said yes when asked directly if the earthquake had magnified previously existing difficulties and problems).

Thus, it is not surprising that the three most singled out problems was housing (68.8 percent), and trailing far behind was restoration of schools and hospitals (6.1 percent) and unemployment (4.6 percent), and with 21.2 percent saying that the earthquake made the housing shortage worst, and 14.5 percent saying the same about unemployment. Put another way, even when certain problems were noted, many of our respondents did not make a sharp distinction with what was normal on an everyday basis and what might have been aggravated by the disaster. Nearly three out of five (59.5 percent) felt the earthquake had made the economic crisis worst, a situation which in many respects Mexicans as a whole considered a far more continuing and serious national problem than even a major but one time disaster in the country's capital. More LC respondents (43.5 percent) than MC (37.7 percent) or UC respondents (35.6 percent) saw the disaster as affecting the economic crisis even more negatively.

Here as well as elsewhere, there were some social class background differences. For example, 85.9 percent of the MC strata compared to 77.3 percent of the LC strata mentioned the housing problem; so did 74.6 percent of UC respondents. LC

persons (22.6 percent) were more inclined to note the problem of schools and hospitals than MC (13.2 percent) or UC (9.8 percent) individuals. Unemployment was very slightly noted more often by the MC (24.7 percent) than by the UC (22.5 percent) or the LC (20.8 percent) respondents.

b. Sheltering and housing activities.

About 10 percent of all respondents claimed that in the year after the earthquake they left their own homes, at least temporarily, to live elsewhere. Nearly 85.5 percent of these leavers went to relatives; another 5.1 percent to friends. This pattern of course is very consistent with what has been observed after many disasters all over the world (Quarantelli, 1984b). Middle class persons, followed by lower class individuals and then upper class persons were more likely to stay with relatives than friends. Shelters were used almost exclusively by people from LC strata, again a pattern noticed in other disasters.

Of interest, only 15.2 percent said they made a move because their own home was severely damaged or destroyed. Put another way, psychological and/or economic factors were more important for those that moved than the physical inability to use their own residence. (This also has been seen in the context of the fact as we indicated earlier that even prior to the earthquake of 1985, there was a deficit of about 60,000 housing units in Mexico City; see Pantelic, 1988). Nonetheless, in absolute numbers, for whatever reason, about two million residents of Mexico City left their homes for some time and the move was in some way related to the earthquake. If we use our figures, published estimates of 500,000 homeless as a direct result of the earthquake may have been overestimation in terms of a physical necessity of a move, but an underestimation of the number of persons who left their homes for a period of time after the earthquake.

The duration of the move also was longer than might have been anticipated. While 27.2 percent of those who moved stayed elsewhere less than two weeks, 60.6 percent remained up to a month. However, only 7.2 percent remained elsewhere more than a month. But translated into absolute numbers around one million two hundred thousand people moved elsewhere for up to a month as a result of factors associated with the earthquake. However, are data are not supportive of a Red Cross report a year after the disaster that 100,000 people were still without permanent homes (Hamilton, 1986:6)

The figures just reported are relatively consistent with other survey data. Looked at from the other side, about 11.2 percent (n=674) percent of our respondents reported that they temporarily sheltered relatives or friends in their own homes

sometime in the year after the earthquake (for some reason, 75 respondents did not reply to the survey question on this topic). Single people were slightly more likely to have been sheltered than married, divorced or widowed persons. However, somewhat different than what movers to other houses had reported, receivers of those who moved said nearly half (48 percent) came to them because they could not live in a damaged or destroyed home and another 21.4 percent because the building moved to was safer. But those who received people in their own homes, said two thirds (67.6) stayed up to a month. This is only a slightly different figure (60.6 percent) as indicated earlier than reported by movers.

Very striking about both those who moved in with others and those who took in others, is that persons in neither category have very negative attitudes about the response to the disaster. For example, those who temporarily moved, that is primarily went to relatives were often less negative than persons who had not gone elsewhere sometime in the year after the earthquake. This is true whether actions, views of organizations or activities are involved.

For example, movers judged the immediate governmental response to the earthquake as not effective less than did nonmovers (18.7 percent to 19.8 percent); a year later, only 14.1 percent of movers rated the ensuing actions of the government as ineffective whereas 20.1 of the nonmovers did so. Movers did not want more information about the earthquake situation than did nonmovers (41.9 percent to 53.6 percent wanted more). Movers compared to nonmovers did not evaluate the Mayor's Office, the military or the police as less organized (the respective figures are 13.2 percent to 17 percent; 7.6 percent to 16.3 percent, and 13 percent to 24.2 percent), and they did not have a more negative image of the President of Mexico or of IMSS (the Social Security Agency). In fact, movers had less negative views than nonmovers regarding how poorly the government had informed citizens about the disaster (31.3 percent to 37.7 percent), how poorly it handled housing support (16.7 percent to 26.4 percent), how poorly it moved offices (20.9 percent to 24.6 percent), how poorly it handled demolition and debris clearance (15.5 percent to 16.8 percent), how poorly it dealt with sheltering victims (12 percent to 21.8 percent), and how poorly it dealt with housing inspection (29.8 percent to 29.9 percent).

While many of the percentage differences are small, the pattern is consistent--movers clearly are not as negative as nonmovers regarding a great number of governmental actions. Those that moved were even less strong in their judgment that the new housing distribution had been unjust (34.7 percent of movers compared to 40.9 percent of nonmovers).

Those who went to live with others do not stand out as a particularly disgruntled category of persons. Even though they moved in the aftermath of the earthquake, and reported they had more problems with electric, water, phone and mail services than nonmovers, they were not especially prone to blame anyone or to have strongly unfavorable views of anything done. Only on a very few points were negative views expressed. For example, movers compared to nonmovers did think the Mexican government handled foreign aid poorly (62.4 percent to 49.1 percent) and they also believed that the housing problem should have the highest priority for attention (75.5 percent to 67.8 percent). And movers did have decreased confidence in the government compared to nonmovers (67.8 percent to 56.7 percent among those who had less confidence). But these were exceptions that stood out because they were so different from the general pattern.

Movers were more likely to participate in disaster related activities than nonmovers (77.7 percent to 53.5 percent), although it appears that most of the difference may be that movers more than nonmovers engaged in immediate search and rescue. But those who moved gave only very slight greater attention to planning for future disasters and had very little more knowledge of general disaster planning or the national system of civil protection. Movers and nonmovers were almost identical in their knowledge of emergency numbers (52.4 percent to 52.5 percent). Nonmovers were actually more likely to have a first aid kit than movers (49.5 percent to 42.1 percent). Put another way, movers did not especially seem to have learned much from their experience.

The picture is roughly the same when we look at the attitudes and behaviors of those who took people into their homes. Along a few lines, those who sheltered relatives were somewhat more negative compared to those who did not take anyone into their homes. For example, those who sheltered were more critical of the immediate governmental response to the earthquake (24.8 percent compared to 19.1 of those who sheltered no one). A year later, the same negative attitude continued (24.7 percent compared to 19.4 percent). They also thought the President was less organized, etc. However, 40.2 percent of those who sheltered others compared to 50.7 percent of those who did not, thought the government had handled foreign aid poorly. Those sheltering others were less likely to have thought of moving out of the city than those who took no one in their homes (68.2 percent to 76.7 percent). There was no difference between those who sheltered and those who did not on how just the new housing distribution had been. Similarly there were no differences on how the police or the military were viewed or how organized or unorganized the President of Mexico had been in his response, or how well the Mayor's office had acted. There were no significant differences in views also on how the

government handled housing inspections, sheltering, demolition and debris clearance, housing support or providing information. Those who sheltered were a little less likely to think that the earthquake had increased trust in people than those who had not sheltered someone (16.7 percent to 20.5 percent).

Again, while many of the percentage differences are very minor, the overall picture is consistent. Those who sheltered others were not particularly negative. While this is understandable about aspects of their own behavior, it is less obvious why others were not blamed or at least given negative evaluations for what happened with respect to the problem of sheltering and housing after the earthquake.

Consistent with what we have found elsewhere in our analysis, again there were some social class differences. For example, 15.8 percent of our MC respondents compared to the LC (21.2 percent) and UC (28.3 percent) respondents thought that the government did not have the situation under control immediately after the earthquake. A year later, the relative rank had shifted as follows: MC (19.4 percent) respondents thought the government did not have full control at that time; the percentage for the LC was 16.4 and for the UC was 3.6. However, in both cases it means that a clear majority did believe the government had control. These figures do raise some questions about political and ideological statements after the disaster that the earthquake had radicalized the lower strata of Mexican society, a position supposedly illustrated by some of the unruly demonstrations that took place in the post-impact period in some of the neighborhoods of the capital city.

#### c. Other participation in post-disaster activities.

A majority of our respondents (55.9 percent) said they undertook some longer run post impact earthquake related tasks. The range of activities was even broader than those carried out in the immediate post impact period (the two weeks after the disaster). On the whole, such persons did not differ substantially in their attitudes from those expressed by nonparticipant, although on particular items there were some minor differences.

For example, participants wanted more information about the disaster (56.7 percent to 47 percent), and they were somewhat more likely to judge the government response in the short run (22.1 percent to 16.7 percent) and in the long run (21 percent to 17.5 percent) as less efficient, than did nonparticipant. They also had diminished confidence in the government as a result of the earthquake; at least of those who changed in their attitudes participants compared with nonparticipant had lost more confidence, 66.3 percent to 48 percent, one of the sharpest differences in the whole survey (However, to keep this

in context, overall a majority--52 percent--said the earthquake made no difference in the confidence they had in the government with 20 percent saying it had increased and 26 percent decreased).

On the other hand, participants did not see the housing problem as needing more attention than did nonparticipant (68.3 percent to 68.9 percent), and they did not judge the Mayor's Office as less organized to cope with a new disaster (16.5 percent to 16.7 percent). They had almost an equal positive view of the government handling of sheltering earthquake victims (46.8 percent to 43 percent), and an equally negative view of the government handling of the NAFINSA fund (47.8 percent to 48.7 percent). Participants had just about the same increase in trust in other people as did nonparticipant (80.3 percent to 78.6 percent). Those who participated in post-disaster activities actually were very slightly ore favorable about military and police actions than nonparticipant.

Overall, the picture is clear: those who participated or volunteered in longer run post impact earthquake related activities and those who did not, were substantially the same in their attitudes about a variety of matters and groups. Perhaps this is because the participants numbered about half of the population with the sheer numbers involved cancelling out differences. Or possibly what we examined were not aspects about which there were differences. Whatever the reason, there was far less difference between those who volunteered in the long run with respect to earthquake related matters and those, who as we indicated earlier, had volunteered in the short run.

#### d. Some positive views.

Not only was there a general absence of negative views about many aspects of the disaster, but some rather positive social consequences of the earthquake also surfaced. Consistent with what some researchers have previously found (e.g., Quarantelli, 1987), the persons in our survey also reported that family ties were strengthened as a result of the experience of the disaster. About 30.7 percent of our respondents said they had better relations within the family after the earthquake than they had had before the earthquake; only 1.4 percent reported a worsening of family ties--the rest said they had not changed. Just about three out of every five respondents (60.5 percent) also thought that the experience of the earthquake had increased the trust people had in other citizens.

There was a social class difference among those who thought trust had increased. This belief was somewhat stronger among LC respondents (82.4 percent) than among our MC (77.4 percent) and UC (74.4 percent) individuals. Overall another 40 percent said it made no difference, with but only 12.3 percent saying

that the earthquake experience resulted in diminished trust. Interestingly, single more than married persons (65.9 percent to 56.2 percent) had developed greater trust. There was no significant gender difference on this perception.

#### Attitudes About the Handling of Earthquake Related Problems

##### a. Views about general and specific governmental activities.

It is of interest that a majority of our respondents saw the government as growing more effective during the year after the earthquake. While 31.9 percent viewed the governmental response as very effective in the immediate days after the earthquake, the figure rose to 44.1 percent for the year. In contrast, there was little change among those who saw little effectiveness (19.5 percent for the immediate post impact period and 19.5 percent for the year period).

While there was not much consensus on what was handled especially well in the immediate post impact period with very many activities being volunteered, the rescue of survivors and the handling of traffic and security were the two most mentioned. Insofar as the year long period is concerned, again there was little consensus or a singling out of specific activities. But handling the housing needs and problems of earthquake victims was volunteered most of all. (Although when specifically asked about how just--and not simply the handling of--the distribution of new housing had been, 40.3 percent said it was not just, 29.8 percent just, 16 percent mixed, and 13 percent did not know).

Our respondents were also specifically asked about 15 different earthquake-related tasks that the government had undertaken in the year after the disaster. Regarding only one activity--the handling of foreign aid--was there a majority who thought the activity was poorly (31.1 percent) or very poorly (20 percent) handled. (This is consistent with findings reported by Comfort, 1986 who found that while there were positive views about the offering of international aid, most respondents had little information on how to get it and even fewer actually received anything). Nearly a majority (48.1 percent) had the same unfavorable view about governmental honesty in the administration of the NAFINSA account (the donations given for earthquake victims). Somewhat over a third (37.1 percent) thought that a poor job had been done in informing the public on how the recovery was going. Women were slightly more negative than men in their evaluations on these matters.

There were also some but not significant differences between social class strata ranking and negative attitudes on the three problems indicated. UC respondents were only slightly more

likely to be negative than MC or LC persons about the handling of foreign aid; there was a somewhat stronger inverse association between higher social class ranking and how poorly the government was judged to have handled information distribution about the earthquake. On the other hand, the handling of the NAFINSA account was slightly more negatively viewed by LC individuals (49.7 percent) than by MC (47 percent) and UC (45.1 percent) persons.

However, on the other dozen activities, negative evaluations (that is poor or very poorly handling) averaged only 9.1 percent. Looked at from the other side, we can see that a number of governmental tasks were especially positively assessed. For example, 60 percent thought that the restoration of schools and hospitals was well or very well handled; 56.6 percent said the same for telephone restoration; 54 percent for restoration of water services; 49.2 percent also ranked highly the demolition of buildings and the clearance of debris; 48.7 said the same about the passage of laws to increase the earthquake resistance of buildings; and, 45 praised the handling of the providing of shelters for the homeless.

The overall pattern is clear and consistent. Residents of Mexico City did differentiate somewhat in their evaluation of governmental activities, but generally they were considerably more positive than negative. It is also noticeable that the more positive evaluations are of very visible and concrete actions for the most part. Furthermore, in line with what has been noted a number of times now, our respondents whether in volunteered replies or when asked directly generally avoided very negative or unfavorable assessments. It is not that they did not notice problems, difficulties, inefficiencies, delays, etc., but rather that there seemed to be an unwillingness to assign blame or hold particular organizations specifically responsible (in our later analysis we shall consider to what extent this orientation might reflect Mexican cultural values and/or reactions to what the government and other organizations had actually done). Contrary to what some others have written, there is very little evidence that the government was the object of much disdain and rage (e.g., Gavalya, 1987); while undoubtedly there were such expressions and while probably some vocal elements that complained received attention from the mass media and others, we have no indication in our findings that such feelings were at all extensive.

#### b. Attitudes about particular organizations.

Respondents were asked their views about a dozen organizations, especially how organized and how humanitarian they were in their disaster-related actions, and whether the groups were better prepared or not a year later to cope with a new natural disaster than they had been for the earthquake.

Only an average 5.7 percent of our respondents saw the groups as a whole as disorganized or very disorganized. A great part of that percentage is traceable to the unfavorable views held of but two of the organizations, namely the police and the military. Some groups such as the Mexican Red Cross and the Mexican City fire department were negatively viewed by extremely few people (conversely 86.9 percent thought of the fire department as being very organized and 83.7 percent thought the same of the Red Cross).

Negative evaluations of the compassionate or people orientation of the organizations follow the same pattern. Only an average 4.6 percent of all our respondents saw the groups as nonhumanitarian or very noncompassionate, with the majority of this percentage attributable to a very negative perception of the same two groups that are consistently so evaluated, that is, the police and the military. Conversely, for example, the President of Mexico is seen as compassionate or very humanitarian by 62.1 percent of our respondents; the corresponding figure for the IMSS, the Social Security Institute, is 81.3 percent. These findings do support the statements of some observers that relief agencies were generally viewed with gratitude (e.g., Gavalya, 1987).

Also, all organizations asked about are seen as better able to handle a disaster a year after the earthquake than before the disaster. Even the military (better=38.3 percent and less=15.5 percent) and the police (better=32 percent and less=23.1 percent) are thought on balance to have improved. Eight of the groups are evaluated by more than 50 percent of our respondents as having become better prepared during the year after the disaster. The generally rather positive view of the mass media expressed in the 1985 survey is even more strongly asserted in the 1986 survey. In fact, 56.2 percent expect in a future disaster that the mass media will do even better; only 8.1 percent expect a worst performance.

What organizations actually did undertake in the year after the earthquake and whether they actually became better prepared was not something we looked at in our study. But we can say that our findings clearly indicate that the Mexican population in the year after the earthquake developed a more favorable view of the groups and believe they would be better able to cope with a new disaster. That is the social reality we found.

### Learning From the Earthquake

#### a. Sensitivity to future disasters.

Mexico City, given its geographic location, is subject to frequent minor tremors from both near and distant earthquakes.

It is therefore of interest that about two fifths of our respondents (40.2 percent) reported that in the year after a major earthquake, they felt more tremors than they had before the disaster. This is consistent with other studies which indicate that persons who directly experience disasters become more sensitive to cues of dangers than they had been before the occasion (Drabek, 1986:323-327). However, somewhat puzzling is that about a fourth of those responding in our survey (25.3 percent) said that they felt less tremors during the year than they had before. (We of course do not know if there actually had been more or less tremors that could have been noticed by human beings in the year period after the earthquake--in fact since any such data would have to be location specific, in any genuine sense it is not obtainable).

Whatever the sensitivity to cues of danger, there is little question that those who had resided in Mexico City at the time of the earthquake, felt less safe a year later than they had before the disaster. For example, nearly half (46.1 percent) expressed concern about the safety of relatives and friends from future damaging earthquakes. However, at the behavioral level the concern was less pronounced. Thus, only about a fourth (24.9 percent) were more afraid to go to the movies and/or theaters after the earthquake than before. Although here again a sizable minority, 19.6 percent, were less afraid than before the disaster. Nearly half (44.3 percent) did say they were more nervous in tall buildings a year later, but the meaning of this is not clear since we have no data on how much our respondents actually went into high rise buildings before and/or after the earthquake. Actually, one study which estimated that 70,000 structures had been damaged said that only 1,400 of them were over four stories. In general, the psychological concerns expressed seemed to be somewhat less than others found up to five weeks after the earthquake (e.g., Dufka, 1988).

About a quarter (26.3 percent) said the thought of moving out of the city had occurred to them, although there is very little indication that it was a very seriously considered move. In fact, when asked reasons for not moving, such reasons as having to work in the metropolitan area were mentioned. Only 1.1 percent of those who even said they considered moving, ever did move. About 5.1 percent of our survey respondents had moved within the area during the year, but that is probably within the normal range of moving.

b. Knowledge of governmental disaster planning.

Little seems to have been learned by our respondents about organizational preparations for disasters. The Mexican government had in the year following the earthquake set up a new federal level disaster agency--a national system or agency

for civil protection. But only 7.2 percent of our survey respondents even claimed that they knew of the federal organization. But even this is a figure considerably on the high side, for when probed about their knowledge of the system, very few persons could give any details. In fact, 40.8 percent of those who said they had heard of the civil protection system admitted they knew nothing about it. Almost everyone else who volunteered some details were incorrect in their statements.

Actually it is fairly clear that even among the relatively few (14.1 percent) who claimed some knowledge of formal disaster planning--apart from knowing of the civil defense agency or system--knew very little. Thus, there was a tendency to equate awareness of school drills, the military plan, and a variety of other particular agencies (e.g., the police) and/or programs (e.g., reconstruction costs), with knowledge of disaster preparedness planning. Men who claimed twice as much as women that they had awareness of disaster planning, did not have any better comprehension of details.

Interestingly, only about two thirds--66.1 percent--thought the government should have the responsibility for disaster planning and rehearsals. Overall, there was a great willingness to participate in evacuation drills with 90.6 percent so stating. Those who either sheltered or took shelter with others after the earthquake were slightly more inclined to do so.

#### c. Individual involvement in planning for future disasters.

In terms of self knowledge and actions, the overall picture is less clear and in some respects puzzling. When respondents were asked very specific questions about their own earthquake preparedness planning, a surprising number of persons said they had taken relevant actions or were specifically prepared. On the other hand, when respondents had to volunteer what they might have done along these lines, claims for having done something dropped substantially.

For example, when asked directly a majority reported they had undertaken some particular emergency-related actions or were specifically prepared in some way. Thus, more than three fifths (63.3 percent) said there was agreement within their family as to a safe place within their home. Over half (52.5 percent) indicated they knew emergency numbers to call if needed, although it can be assumed that some persons would know them independent of any disaster situation. Nearly half (48.7 percent) stated that they had a first aid kit in their homes--although the way the survey question was asked did not allow establishing if the kits had been obtained during the previous year and/or as a result of the earthquake. Nearly half of our respondents also said they had developed (when applicable) disaster planning for children and/or elderly in their own

households. About a third (36.1 percent) indicated they knew the safest way to leaving their house in case of an earthquake. A little more than one of every four (26.1 percent) responded that was an agreed upon meeting place for the family if members were scattered at a time of a disaster. These kinds of figures are considerably above with what has been reported elsewhere about learning from the experience of a disaster (Drabek, 1986:323-327).

On this matter also there were some consistent social class differences in claims advanced of having prepared for future earthquakes. As has been reported elsewhere (Drabek, 1986:24) there was a direct relationship between higher socioeconomic status and assertions of having undertaken disaster planning. For example, 53.6 percent of UC respondents compared to 35.4 percent of MC and 27 percent of LC persons--among those who said they had done anything--had planned for a future earthquake (the respective figures for having a first aid kit were 70.9 percent UC, 51.7 percent MC, and 42.1 percent LC, and for knowing emergency numbers, 61.5 percent for UC, 57.1 percent for MC and 47.1 percent for LC respondents). Not surprisingly too, on most matters married claimed they had undertaken more preparations (38 percent to 29.8 percent).

In contrast, answers to open ended questions suggest specific learning may have been substantially less than the figures above might indicate. Only about a third of our respondents (33 percent) said they had given some thought or had done some planning in the event of a future earthquake. But among those (n=247) who made such a claim, the specifics were usually very vague. For example, under planning, respondents volunteered such actions as attempting to remain calm, leaving the house, looking for a safe place inside one's residence, helping others, leaving quickly, and similar kinds of activities. Very few mentioned the specific actions discussed above such as an agreement on the safest place in the house, special attention for dealing with children and/or elderly, or an understanding where family members might meet after a disaster. In fact, 34.4 percent volunteered that they just as soon preferred not to make any planning, another 12.8 percent admitted planning had not crossed their mind, and another 7.2 percent said preparations were pointless. There is little in these sets of answers to believe that many households had given much concentrated attention or had specifically discussed how family members should act in the case of another earthquake.

### PART III: ORGANIZATIONAL BEHAVIOR

In this part of the report, we discuss what we found out about organizational behavior in the immediate aftermath of the Mexico City earthquake.

#### Chapter 6. The Governmental Structure and Disaster Planning

In order to understand the organized response that occurred to the earthquake, it is necessary to comprehend the governmental structure of Mexico City as well as the disaster planning that was in place prior to the event that caught world attention. Thus, in this chapter we will briefly describe the structure of government at the level of the Federal District and the kind of preparedness planning that existed before the earthquake. In the following chapter we will describe the basic organizational response patterns, both public and private, that occurred during the first three days of the emergency period. In the chapter after that--in chapter eight--we will depict the various problems and difficulties that emerged as organizations attempted to cope with the demands of the earthquake after the third day but still during the emergency period (which end approximately two weeks after the initial earthquake). In one sense, the presentation goes from the immediate preimpact through the transimpact to the end of the immediate impact phase.

Before indicating our research findings, we should note the following regarding our approach and methodology. First, because primary responsibility for responding to the earthquake within Mexico City was placed within the Mayor's Office or the Department of the Federal District (DDF), DRC originally thought it best to focus descriptively and analytically upon this institution and to treat it as an entity of local government that might be similar to local governments in the United States. Consequently we initially concentrated upon the response of the Mayor's Office (DDF) and looked at other responding agencies, such as federal agencies and private institutions, as ancillary and of secondary importance in the governmental effort to cope with the earthquake. While this analytical research focus had a number of benefits, it proved to be problematical due to the complexity of the DDF and the massive, decentralized response by numerous Mexican organizations to the disaster. It became impossible in our analysis to concentrate mostly and primarily upon the DDF. Therefore, in what is presented below, we will also note the important role of various other public and private organizations, such as PEMEX (the Mexican national petroleum company), the Mexican Cruz Rojas (the Red Cross), health institutions, the TOPOS (a group of miners who are expert in rescue operations) and organized volunteers in the response to the earthquake.

## Governmental Structure

The sprawling, urban area of Mexico City is probably the largest community or metropolis in the world. Not only is it the political center of the nation, but it is also the economic, cultural, educational, medical and social hub of the country. Thus, within the metropolitan area are concentrated the major financial institutions, scientific and educational complexes, mass media outlets, industrial and commercial establishments, and hospitals and medical schools.

Being the national capital, the governmental structure of Mexico City is similar, but not identical, to that of Washington D.C. The city is not a part of any of the states of Mexico and maintains its own political autonomy as a federal district. The Department of the Federal District is the governmental body that oversees the provision of public services for the city. The DDF, however, does not have the degree of political independence from the federal government that is associated with most American cities, nor even that which is associated with Washington D.C. The Mayor of Mexico City, for example, is appointed by the President and is not elected by the citizens. Also, the DDF itself is part of the federal organizational structure.

Furthermore, the organization of the DDF is very complex, both with regard to the variety of functions that are performed and the structure of intraorganizational relationships. In addition to police and fire organizations, the DDF is composed of subdepartments for such services as water, medical and health provisions, transportation, electricity, planning, housing, welfare, streets, and sewer. Furthermore, within these subunits there are additional specialized divisions; for example the provision of bus transportation and subway transportation are handled by separate administrative units within a larger subdepartment. (Although the DDF has sometimes been referred to as the "Mayor's Office," it should not be equated with a single, political or governmental post. It is more properly viewed as the totality of local governmental structures and activities.)

The complexity of the DDF is further indicated by the fact that within the federal district there are 16 subgovernmental units called delegaciones. These 16 units exercise governmental authority within limited geographical areas of the city. They are not similar to wards or precincts within American cities. They are not simply political units. They are in fact somewhat autonomous, local governmental units that provide their own services to their surrounding areas. (From the perspective of someone from the United States, Mexico City could be said to have 16 sub-City Halls.) For example, the delegaciones have their own public works, water, housing, and other departments that are controlled by them. As a result of this structure, the daily governmental activity of Mexico City is highlighted by

significant decentralization.

In understanding the organizational response to the earthquake, it must also be noted that the resources and organizational structure of the federal government itself are located within the boundaries of the DDF. The federal government also has many secretariats that functionally duplicate those at the DDF and delegaciones levels. For example, there are secretariats of health, urban development and ecology, communications and transportation, agriculture and water resources and others. As will be noted below, although the divisions between federal and district agencies with similar responsibilities may be clearly delineated during normal operations, this independence and autonomy was considerably less during the emergency period of the disaster as tasks overlapped and resources from the federal level were also utilized in the response to the massive problems within the city.

### Disaster Planning

With regard to the nature of disaster planning that existed prior to the earthquake, it is also necessary to make a distinction between federal plans and those within the city. The federal government did have a plan for disasters. The document, known as DM-III-E, assigned the responsibility for coordination of emergency response to the Mexican Army. Upon declaration of a disaster by the President, the army is to assume control of all major response actions. The plan basically was constructed upon the assumption that disasters would occur in rural areas and distant places, such as the far reaches of the Gulf and Pacific coasts. Within the Mexican context, the army has greater involvement in Mexican civil life than is found in the United States. It is a resource of the national political system, and its control of human and material resources were the cornerstone of the federal response to disasters.

Within the federal district there had been virtually no formal planning for disasters, particularly for one of the magnitude encountered in September, 1985. While certain departments and subunits, such as those within public works and the subway system, had standard operating procedures and some plans for handling emergencies and disruption to their own operations, there was no overall, system wide planning for the DDF. A Unit for Civil Protection (SIPROR) had been created within the Mayor's Office. However, its primary concerns were with normal fire and police responses.

In sum, prior to the earthquake the situation in Mexico City could be described as one of extreme organizational complexity, a relatively decentralized metropolitan government, and limited national and nonexistent metropolitan disaster planning. But that was alongside a massive pool of human and material resources

that could be potentially employed or used in mass emergencies. Moreover, the proximate location of various federal agencies to earthquake impacted sites was vitally important, because these units were an important source of such latent resources. As we shall describe in the following pages, all of these just noted aspects would play a major role in the organizational response that was to begin on the morning of September 19, 1985.

## Chapter 7. Organizational Response During the Emergency Period

As noted earlier, at 7:18 am on the morning of September 19, 1988 the nation of Mexico was struck by a major earthquake, measuring 8.1 on the Richter scale. The earth movement inflicted some overt damage in the states of Colima, Guerrero, Jalisco, Morelos, Michoacan, Oaxaca, and Puebla. But the greatest destruction and damage occurred in the federal district of Mexico City. The next evening at 7:38 pm another major earthquake measuring 7.5 on the Richter scale occurred during the carrying out of initial rescue and relief activities in the capital city.

The destruction from the two earthquakes was diffuse and appeared somewhat random throughout the massive metropolis. However, it tended to be concentrated in the north central and eastern sections of the city. In those localities, the working class neighborhoods of Morelos, Centro, Guerrero, Doctores, San Antonion Abad, Tlateloloco-Nonoalco, and the middle class areas of Cuauhtemoc, Roma, Condesa, and Juarez were particularly hard hit with most of the major damage being centered in three of the delegaciones, namely Benito Juarez, Gustavo Madero, and Cuauhtemoc--the last suffering the most physical damage to buildings.

The first violent earthquake disrupted a normal Thursday morning in Mexico's capital city and launched a massive organizational and individual response to the emergency. In discussing the nature of this response during the first three days, we will present in rough chronological order, some major decisions, activities, and problems. The picture that will emerge is one of a very decentralized but intense pattern of organizational activity.

At one level, the response can be characterized as lacking coordination, involving duplicative efforts, organizational conflict, and, as we were repeatedly told by Mexican informants, appeared to have a healthy dose of "chaos". Certainly for some organizations and groups, particularly as seen by officials at middle and lower levels of organizational response, this description seemed obviously true. The response was certainly ad hoc in nature, and was not based upon prior planning.

However, at another level the response did involve immense and useful activities by a number of federal and district agencies as well as those from delegaciones. Many of the actions were undertaken relatively autonomously and independent of what other groups were doing, although within the involved organizations there was often through time the development of internal coordination. Furthermore, there were also pockets of interorganizational coordination among some of the responding

groups. Therefore, any depiction or discussion of difficulties of coordination or of problems must not obscure the extensiveness and intensiveness of organizational activity, as well as the massive individual coping and helping behavior that was discussed in Part II of this report.

The organizational response of the Mexican public and private agencies was not only massive; it was also complex. Within the public sector, agencies and departments from the national, federal district, and delegaciones levels were involved. In addition, a variety of private agencies, businesses, and voluntary organizations also launched major activities, and new citizen groups also appeared on the scene. (This is in addition to the individual volunteers we discussed earlier in Part II who concurrently launched a mass assault on the problems of immediate search and rescue, casualty care, and providing aid to the victims). In order to better understand the nature of the response during the first three days, it is important to keep in mind the complexity of this multiple assault upon earthquake generated problems.

#### Initial Governmental Actions

Within a few hours of the initial quake the President of Mexico, after receiving some initial and incomplete reports but accounts of substantial damage, declared that all the resources of the government should be devoted to responding to the earthquake. The highest priority was to be given to search and rescue for victims, casualty care, and the provision of aid. Initially too, the national disaster plan (the military one) DN-IIIE was partly implemented. The Secretariat of National Defense, under its authority, mobilized army, marine, and navy units to respond to the earthquake. It has been estimated that over 7,000 army and about 1,800 other military personnel were involved in the initial search and rescue activities.

However, after discussions among very high national governmental officials, it was soon realized that there were limitations to the implementation of plan DN-IIIE in the case of Mexico City. It was not a rural area or small city. Furthermore, the sheer magnitude of the problems, the volume of needed resources, and the complexity of coordinating a massive organizational response (and perhaps the complications for civilian authority that might result from having military control in the capital city) were seen as factors that indicated that giving full responsibility to the military for responding to the disaster was neither feasible nor appropriate. Therefore, general direction of the emergency response was not given to the military. Instead it was lodged within a new, ad hoc, emergent entity consisting of two multidepartmental commissions under civilian control. The role of the military was soon limited in the capital city to providing security and crowd control at rescue sites (although the military

plan seems to have used in all other impacted localities outside of the Federal District). Eventually responsibility for overall coordination of emergency response within Mexico City were placed within the Mayor's Office in the DDF.

Two ad hoc coordinating committees were created by the President during the first two days of the disaster. On September 20, he established the National Emergency Commission (CNE) and appointed the Secretary of Government (Gobernacion) to be its chair. The CNE was composed of representatives from the Secretariats of National Defense, the Navy, Foreign Relations, Health, Education, Communication and Transportation, Planning and the Budget, and Urban Development and Ecology. It also included a representative of the DDF. This commission was to coordinate the governmental response to the earthquake in areas outside of Mexico City.

Second, a Metropolitan Emergency Commission (CME) was also established and headed by the Mayor of Mexico City and centered within the DDF. This commission was authorized to coordinate emergency operations within the federal district. The commission was divided into a number of task related subgroups, such as those for security, public health, rescue, building inspection, shelters, feeding the public, donations, legal damages and the dead, hydraulic and urban services, collective transportation, etc. Furthermore, representatives of a variety of federal level agencies, including the Secretariats of the Government, National Defense, Navy, Planning and the Budget, Agriculture and Water Resources, Education, and Communication and Transportation were also appointed. As delegated, the DDF was to be in charge of emergency response, with the Mayor's office assuming overall direction.

A number of observations regarding this emergent disaster management system may be made. First, it was not until after about three days that both groups were actually operating, which limited the effectiveness of the CME in coordinating certain early response measures, for example, the initial organized search and rescue activities. Second, the complex relationships between the federal and metropolitan levels can be seen in the inclusion of representatives from both segments on both committees. Third, partly due to the lack of prior disaster planning by the Mayor's office, the response was ad hoc in nature. It was contingent upon responding to situational events given the lack of prearranged strategies or established patterns of authority for interorganizational coordination.

Apart from the lack of any prior civilian disaster planning, the ability of both the federal government and the DDF to perform a major coordinative role during the initial emergency period was impeded by a number of factors. First, many governmental buildings were destroyed or badly damaged. For example, the Secretariats of Budget, Communications and Transportation, Labor

and Welfare, Commerce and Industrial Development, Agriculture and Water Resources, and the Navy and such offices as the attorneys for the DDF and Consumer Affairs all had buildings destroyed in which they had offices. Other units, such as the Secretariats of Government, Urban Development and Ecology, Health, the Mexican Institute for Social Security, and CONASUPO also suffered damage to their office structures. Therefore, during the initial part of the emergency period, considerable attention had to be paid by these agencies to simply assessing their own damages, aiding their employees who were victims, and procuring or salvaging resources.

Second, the critical tasks of damage assessment and early information collection were hindered by the diffuse nature of the event, the massive destruction of property, the difficulty of movement through debris strewn areas, and the disruption of the communication system. As a result, information could only be gathered with great difficulty and an overview of the level of destruction and critical areas for response was not obtainable in the initial period of the emergency. Such information, of course, is critical if coordination of response activities is to occur.

Therefore, during the initial three days of the event, both the national government and the DDF were involved in the difficult processes of gathering information about damages and problems, and developing an emergent organization to coordinate the emergency response. By the third day the structure was in place. The CME established an Emergency Operations Center (EOC) at the National Palace. Each evening representatives of the various DDF and federal agencies would meet and present reports on actions taken and plan for future activity. These meetings were held throughout the emergency period.

It must be noted, however, that this EOC was not similar to the type of arrangement found in the best prepared of communities in the United States. In other words, it was not a facility that was staffed "around the clock" with representatives of various responding agencies and in which communication and decision-making were centralized. A number of responding governmental groups, such as PEMEX, Public Works and the transportation agencies did have typical 24-hour EOC's for coordinating their own, internal response. However, no such arrangement was established at the federal level to provide continuous supervision and coordination of the activities.

## Initial Response of Other Organizations and the Public

While it required about two to three days for the DDF to develop a structure and pattern of activities to coordinate the response, it does not mean that no collective and individual responses to the disaster were taking place during that time period. They were occurring and extensively. Millions of volunteers (as we described in Part II of this report) and hundreds of public and private organizations launched a mass assault on the human and social needs and demands created by the earthquake. The foremost issues and problems confronting the responding groups during the first three days included the more formal search and rescue, the delivery of emergency medical care, the giving of emergency shelter, the provision of food and especially water to residents of the city, damage assessment, the security of property, control of traffic and crowds, and the handling of the dead.

With the damage spread across a wide area (even though there were certain points of extreme concentrated destruction) literally thousands of sites required attention. Necessarily a great deal of the response therefore was situationally specific. Given the lack of planning at the local level for an event of this nature, organizations and individuals initially set themselves to attending to the immediate problems presented in their own immediate areas, almost to what they could literally see before them. Furthermore, public agencies and departments with traditional domains and responsibilities also had to ascertain the condition and needs of their own operations, before they could concern themselves too much with what was happening outside of their own groups.

Because of the diffuse and response specific nature of the organizational activity, it is somewhat difficult to generalize about the experience of the various organizations. While the lack of overall coordination of the response affected all organizations to a degree, it was particularly pronounced for some, even though some groups and agencies managed nevertheless to engage independently in earthquake related tasks.

In order to give a flavor of the varied response activities that were generated during the first three days, we will briefly depict the actions of a few different public organizations. These descriptions are offered only as examples of the nature of tasks and types of problems that were occurring for the immense number of responding organizations. We do not pretend to offer a full account of all the governmental actions in the earthquake, since that was never a DRC research goal. It will be noted that all of the organizations discussed undertook at least some new emergency time tasks and extended their activities into work areas that were nontraditional for them.

a. The response at the level of the delagacion

Since our primary interest was in the response of the "Mayor's Office," we will discuss the response within delagaciones in some detail. We will use as our example here one of the most heavily involved after the earthquake.

The office of one delagacion was located in one of the most severely damaged areas of the city. When the workers arrived on the morning of September 19, they had little comprehension of the magnitude of the destruction or the degree of activity that was necessary. One of the first tasks was the acquisition of information. As one staff member said in an interview:

We organized ourselves and volunteers into brigades to go and bring back information about what had to be done. But when the brigades came back, the information we received was of duties that were impossible to carry out; there was simply too much to do. The sub-delegation of Works went out with their trucks and shovels, but it was overwhelming.

This task was made difficult because of the lack of interaction and coordination with other units. At first, this delagacion was informed that the DN-IIIE plan would be implemented.

I wondered what had happened to the DN-IIIE plan. It was second day, and still no one had come. We were told to relax, that the plan would go into effect, and that their people would come, but they did not. I don't think people even knew about the plan, or maybe they thought it was already in effect. Anyway, no one came.

The problem of a lack of any integration of a vertical nature (that is, up and down between organizations at different levels) with the DDF was fairly severe during the first two to three days. For instance, on the evening of the first day, a group of men with communication equipment did arrive to establish a link for the delagacion to the DDF. But this did not lead to any actions by the group that came as a result of policy making or directions from above in the organization of which it was structurally a part. As one respondent in an interview noted:

There was no coordination with the Department. On the first two or three days the delagacion was not able to carry out its duties, but the DDF did not take over, either. There was a complete absence of a line of authority or coordination. Supposedly by that time the DN-IIIE plan should have gone into effect, a desk established for sending out directives, a camp of action, a hierarchy, and there was none. So many of the efforts were in vain,

because everyone -- like a hundred institutions, education, universities -- went out to the streets doing things without any direction.

But they were in fact doing things. Within this delagacion, for instance, the workers commenced a number of important activities. Public works personnel became involved in rescue and debris clearance. Those from the water department worked at inventory and repair of the system. The building housing the delagacion served as a temporary morgue. The staff began the collection and distribution of food and relief supplies. Shelters were established wherever victims gathered. A census of the affected population was begun.

A last problem, the one of developing a list of missing and dead persons, was a task that took the time and resources of the staff of this delagacion for a number of weeks. It was also a task beset with problems and hindered by the lack of coordination across horizontal boundaries, that is from one organization to another organization. For example, workers from the delagacion were denied access into areas by army personnel who had cordoned the most severely damaged locations. Staff members even were not able to gain access to LOCATEL (the missing persons bureau). They circumvented this problem by disguising themselves as stretcher bearers and gaining access to the restricted areas, to carry out their census.

With regard to the other tasks, the problems experienced were similar to those found in other disaster settings, with the compounding influences being a lack of information and coordination.

The information I had, I received from the radio. I got hold of a radio, because it was the only thing to do. . . . We had an enormous difficulty with communication and the movement of vehicles. On one side, vehicles were not being permitted to pass. On the other side, vehicles could not pass because of fallen buildings. So there were many areas, houses, buildings, where help was truly needed. But there was no census really to say which were the requirements for salvage. Some areas went for many days without having a brick turned over.

Many shelters were established and it was difficult to maintain a census of just how many shelters there were because all kinds of church groups and organizations were offering their good will, offering their churches, sanitariums, schools, whatever, as shelters. One morning we woke up with 42 shelters, and in the afternoon there were 272!

In undertaking the task of shelter management, this delagacion assigned the duty to social workers who in turn coordinated the spontaneously established shelters. Volunteers, who were not working on the census of missing persons, were placed in the shelters to live there and coordinate the feeding, monitor the sanitary conditions. etc. Through the first three days, the delagacion attempted to consolidate into a few major locations at community and sports centers the many spontaneous shelter arrangements that had emerged.

Convergence of supplies and personal upon this delagacion also presented some problems. Unsolicited aid poured quickly into their office in the form of food, clothing and medicines. As one informant noted, within hours material was stacked three meters high in the auditorium. The medical services division of the delagacion was placed in charge of the inventory and its distribution. They were assisted by many individual volunteers. There was, however, no coordination of this effort.

One minute we would have no food, and the next it was piled so high that we couldn't store it. We would distribute it immediately to an area, and when we arrived to give out the food, other private agencies would be there. There was no coordination of this activity during the initial period.

We never really had a shortage of food, in fact, it was the opposite. Tons of food arrived from restaurants, institutions, whatever. The shelter people would come with a truck of food, and in an instant, there would come another truck. People just took what they needed.

The delagacion was also inundated with volunteers. In this case the major difficulty was in determining who was legitimate, what skills they possessed, and how they might be utilized.

During the initial emergency period, this delagacion did receive aid from personnel from five other delagaciones in the district that had not been as severely damaged. However, even this needed assistance involved coordination problems between previously autonomous units.

On the second day, people from other delegados, where nothing had happened came to support us. Apparently, they were ordered to come by the DDF, but it was difficult, because we did not know each other. The rest of us had been working together. They were asking what to do, where is this and that? The help was not very defined with regard to equipment or personnel. There was little order or chain of command.

There were some instances of coordination with other groups at the same horizontal organizational level. For example, in undertaking the census, the delagacion was assisted by representatives of a university. However, such kinds of contact was generally absent.

The only semblance of vertical integration (communication or interaction up and down within the same organizational structure) with the DDF was what we had described earlier: the arrival on the first evening of a team of communication personnel. However, they arrived without prior notification and simply proceeded informally to set up in the building. The workers of the local delagacion did not know who they were, or what their major purposes was, except that they were going to provide a linkage to the outside world.

In sum, this delagacion engaged in an intense ad hoc pattern of responding during the emergency. They also did so during the first two to three days without the aid of either prior planning or centralized coordination from the DDF. In terms of both their vertical and horizontal operations, they generally were autonomous from other organizations. The important matter of providing shelter, food, rescue, water supply, damage assessment and census taking was vital to the residents in their own delagacion. However, this group was not part of an integrated organizational response system, and its members were not able to coordinate its activities with those of related organizations.

It was not until they heard the President of Mexico through the mass media assert that control of emergency response would reside with the DDF that they clearly understood "who was in charge."

#### b. The response of PEMEX

PEMEX is the national petroleum company of Mexico. It is a massive organization, employing thousands of personnel and possessing voluminous resources. Although it suffered no major damage to either its equipment or production capacity, PEMEX assumed a major role in the immediate post impact period of the earthquake. It was able to mobilize over 5,000 workers and engage in a variety of emergency tasks, particularly those of search and rescue and of sheltering. Furthermore, it undertook these activities with great autonomy and limited its interaction with other organizations to the development of some coordination with the Army.

An initial inventory of PEMEX facilities and equipment indicated to its officials that the organization had not been severely impacted by the earthquake. This fortuitous circumstance allowed PEMEX to turn its attention to other emergency tasks, in

particular that of search and rescue in collapsed buildings.

The initial request for a PEMEX response came from a hotel. However, the company officials felt that they were not authorized to assist in such nontraditional work tasks as search and rescue. But within two to three hours the magnitude of the disaster became apparent, and the decision was made to mobilize PEMEX'S massive resources to aid in the response. The Director of Projects and the Director of Security for PEMEX coordinated the response. As an official of PEMEX said:

We began to organize a system of aid. We checked to see what supplies we could get right away. We contacted the superintendent, the ministers and their supply houses so that they would provide us immediately with an inventory or equipment, mainly cranes. . . . We decided at that time that the most important thing was to extract the greatest number of live people.

In undertaking these initial tasks, PEMEX partly coordinated its activities with the Army. Primarily this involved the Army requesting PEMEX'S help, and PEMEX proposing that all search and rescue projects have army representatives to account for recovered money, extricated bodies, found properties, etc. Even this interaction presented some problems of coordination during the first two days.

I think that during the first two days there existed an emergency in which you could say there was chaos, there was disorganization, and anguish. This was true both in our relationships with the Army and internally . . . . You see, whenever the army needed an action from us, they would get in touch with our security chief and tell us. But there was much disorganization and lack of coordination. Why? Because there had never been a chance to work in a situation like this.

Although it continued to work with the Army, PEMEX decided it could most effectively work independently from other organizations.

I thought that we (PEMEX) could organize in a self-sufficient way with well placed work crews. . . . that (situation) allowed us to organize the work teams, machinery, personnel, feeding of workers, lodging, etc. So we contacted the Army and asked them to consult with us at different work sites.

An emergency operations center was established at PEMEX headquarters and emergency communication equipment was installed. A map of damaged areas was constructed, and PEMEX decided to focus its rescue activities on 24 major sites, including such

important buildings as the very heavily damaged Juarez Hospital and the General Hospital. The city was divided on a map into four sectors. Within each sector, one PEMEX supervisor was placed in charge of field operations. Within each sector there were a number of sites or "fronts" at which PEMEX worked in rescue and debris clearance. Each site also had a coordinator

Within two days, about 5,000 organizational personnel were mobilized from Mexico City and from neighboring states. Arrangements were made for housing and feeding the workers. The medical staff of PEMEX was utilized in providing medical aid at the various sites and to the rescue workers.

In addition to carrying out search and rescue tasks, PEMEX, through the Union of Petroleum Workers, also established and managed two major shelters for the victims. One was set up at a college building and at one of the refinery facilities. Food and materials were provided by PEMEX with the staffing of the shelters being handled by the union workers. The shelters were operated for only a few days, and then the residents went to other shelter sites supervised by the DDF.

In a relatively short period of time, a rather elaborate emergency response team emerged within PEMEX. Architects, construction supervisors, doctors, security personnel, and workers were organized into a very autonomous unit after the first two days.

Autonomy certainly epitomized the response of PEMEX. Except for their relationship with the Army, the company worked by itself. One top official explained the advantage of this type of arrangement for the organization.

When we know the resources the PEMEX has, we tend to want to be self sufficient. That was one of the proposals put forth to the director, i.e., that so we don't work in a disorganized fashion, and so that we can accomplish specific tasks, nobody should get in the way. That might sound a bit lofty, but that's the way it seems. Because, we see other institutions as very disorganized, not knowing what to do and they do not have our resources. . . . up to the point that Telefonos de Mexico called us to find certain tools because they had problems with their requisition equipment. But, we really didn't coordinate with others.

Apart from the Army, the only interaction PEMEX had with either the DDF or other elements of the federal government, was to meet twice after the first two days with the DDF to inform them what PEMEX was doing, and to have a similar meeting with the President. This lack of communication, contact and coordination,

while obviously perceived to be beneficial to PEMEX, was also noted by an official as having negative consequences.

I think that is bad (the lack of coordination and integration). Because a system should be demonstrated that, in another situation of emergency, could be implemented quickly so that we all could collaborate.

PEMEX extricated over 1,000 bodies from the rubble and claimed to have rescued over 400 living persons. Basically, the company operated by itself, and was left alone by others. Due to its massive resources, its visibility and legitimacy within the nation, and its ability to structure an effective internal organization it provided a valuable service to Mexico City.

#### c. Response of lifeline organizations

The earthquake had a pronounced differential effect upon the various lifeline organizations. For some organizations, such as Telephones of Mexico (TELMEX), the damage and disruption were severe. The main building of the system partially collapsed. About fifty trunk networks were extensively damaged, and 750 multiplex equipment units were destroyed. Also, six operations centers for long distance operations, six buildings, and all manual operation centers were rendered unusable. In addition to losing all national and international long distance lines, 14,500 local lines were cut (Bohlen, 1986: 11),

Similarly, electricity was lost to nearly half of the city after the first earthquake. Over 800 transformers, 28 kilometers of high tension lines and 32 kilometers of low tension lines, were damaged. For these lifeline organizations, their primary response was limited to a massive effort to restoring their own system. In some cases the response was notably effective. For example, electrical service was generally restored to all but the most severely damaged areas of the city within 72 hours.

The water system also suffered significant damage. Damage was done to the Chalco-Xochimilco aqueduct which supplied about half of the water that was lost. Thousands of leaks were formed in the piping system and water distribution was lost in the most heavily damaged areas of the city. As noted earlier in Part II, nearly 40 percent of our sample reported interruption of their water supply.

Other lifeline organizations fared much better. There was no significant damage to Mexico City's highways, railways, ports or airports. Bus service was disrupted in some areas, due to debris clogged streets. The subway system suffered very minor damage and was operating at close to full capacity within six hours and with full capacity by the second day.

The responses of these lifeline organizations during the first three days was highlighted by a number of characteristics. First, there was a massive and complex response involving organizations from the federal, district, and local delegaciones levels. While there was some coordination of activities across similar lifeline agencies who normally interact during their day-to-day operations, during the initial period the agencies tended to act autonomously. For example, there were instances of workers from the federal, district, and local levels all appearing at the same site to repair the same water pipes.

Second, the initial response of all the organizations involved damage assessment, information gathering, and an attempt to repair and restore as much service as quickly as possible. For those lifeline groups that were the most severely disrupted, these tasks dominated their concerns.

Third, except for those groups whose suffered substantial damages affecting their own operations, many of the other lifeline organizations extended their emergency activities into areas that were not part of their traditional domain or functional responsibilities. They became involved in such tasks as search and rescue, providing emergency aid, potable water, and debris clearance. Possessing large numbers of personnel and equipment, they rapidly became involved in nontraditional tasks. This extension of activities was particularly pronounced for such lifeline organizations as the subway system, department of transportation, public works and streets, but also involved federal level agencies, such as the Department for Public Works in the Secretary of Agriculture and Hydraulic Resources.

Fourth, although there was not a city wide EOC operating on a 24 hour basis to coordinate activity, internally most of these agencies established command centers to coordinate the response of their own organizations. For example, the Department of Urban Transportation within the DDF established an EOC within the first two days, as did the subway system and others.

Typical of the types of activities and problems that were occurring for these organizations are the responses of such agencies as the Public Works division of the Secretary of Agriculture and Hydraulic Resources. Immediately after the initial earthquake on September 19, the department of Public Works formed brigades of workers (including administrative and support personnel) for search and rescue activities, the transportation of victims, and other related tasks in the immediate vicinity. Soon, they were requested by their Secretary to evaluate damages, a task which took place for the first two days. In addition, they were asked by their agency to supply

potable water to people in the most severely damaged areas. None of these tasks were part of their normal duties. The situation was described by one informant in the following manner.

These tasks were very difficult at the beginning. First, we were asked by the department to evaluate damages, and that took up much of the 19th. Many of our people were already working on various rescues, helping people. Then, we were asked to supply water. We don't normally do that. We only have five water wagons, and we used them to supply water to hospitals and refugees. We had to contact private companies and ask for help. Eventually, we were able to get 92 wagons.

The nature of coordinated action was described by one informant as follows:

During the first two days, everything was absolutely spontaneous and improvised. There was no coordination, just spontaneous help. For the first two days, the situation was close to chaos. However, by the third day things were getting organized.

By the third day, the Secretary gave instructions to each of the departments regarding task allocation. The Public Works unit was assigned the task of receiving materials and equipment from outside private and public agencies and coordinating the mass of volunteers. They also designated 20 specific work sites, which would serve to allocate personnel and equipment to engage in rescue and debris clearance. Also by the third day 92 water wagons had been secured and a more coordinated system for supplying water was established.

Also on the third day, they contacted the DDF and identified the priorities for their tasks and began to coordinate their activities with DDF personnel. In addition, they developed contacts with such other organizations as the United States Embassy (which provided needed equipment), the University of Mexico (which monitored the water quality in the mobile units), and the Water Commission of the State of Mexico (to whom they gave some equipment and divided the city into areas in which each organization would provide water.)

In carrying out these emergent tasks during the first three days, the agency faced three major problems. First, given the lack of prior disaster planning, the response was ad hoc, spontaneous and lacked initial coordination. Second, they had numerous equipment failures. Third, they had difficulty in integrating and

coordinating the massive influx of volunteers. As noted by one informant:

The arrival of people and volunteers was enormous, but it turned out to be a source of difficulties for us. People started pouring in from all different states, and they came without tools or equipment of any kind. Before they could be assigned and sent to a post, providing for the food and equipment they needed proved to be very problematic for us.

Other lifeline organizations extended their activities into similar nontraditional areas. The subway system, which is part of the DDF's Department of Transportation, initially turned its attention to restoring its operations. The metro system received relatively minor damages, most of its trains were able to reach stations, and within hours was operating at near peak conditions. By the second day they turned their attention to other emergency tasks.

One of the first things that occurred after we reestablished metro service was the creation of brigades to help the people of the city. People within the metro organization suggested that we create these brigades -- not so much as a help to any other organization in particular. The general response was not what to do now, but rather just to do something.

We brought in medical, civil works, and administrative personnel. We brought trucks, equipment, medical supplies that we have in our clinics, such as oxygen tanks, shovels, picks, gloves, etc. We organized the brigades to be sent to different zones of the city.

Then we dedicated our efforts to other aspects. We organized all our technical and professional people so that we could evaluate civil works, such as bridges and buildings. We provided a group of architects and engineers to other organizations.

Unlike the Department of Public Works from the federal level agency of the Secretary of Agriculture and Hydraulic Resources, the metro system did have contact and some coordination with other units of the DDF. Through the Department of Transportation they initially made contact with the Secretary of Government of the DDF on the afternoon of the first day. Information was exchanged and tasks were discussed. However the major coordination that did occur took place within the emergency operations center of the Department of Transportation. From the third day until the end of the emergency period, representatives of the metro system served on the CME.

In sum, the lifeline organizations became important response mechanisms during the first three days. Possessing large amounts of needed resources and skills, they were able to extend their activities into nontraditional areas. Although overall coordination of search and rescue, debris clearance, casualty care, and the provision of water and food was not achieved during this period, through time, pockets of coordination between units and intraorganizational coordination did develop.

d. Response of other organizations and the public

The hundreds of other responding organizations and the millions of volunteers launched their mass assault under the conditions we have previously discussed, namely a lack of prior planning and overall coordination. Some of the traditional emergency oriented response organizations engaged in somewhat normal tasks. The police, for example, generally limited their activities to traffic and crowd control. The Army in the first few hours undertook immediate search and rescue action; however, with transferral of authority to the DDF the Army focused its attention upon perimeter control and security at damaged sites.

The Fire Department of Mexico City is part of the Federal District Police Agency. It is very small (only 800 members) for a city of the size of Mexico City, because given the nature of building construction in the city, there are relatively few fires. (For example, the fire department usually has about 3,000 runs per year, compared to over 30,000 in some large American cities.) Relatively few fires resulted from the earthquake. Although over 300 fires were reported during the first three days, a high ranking officer of the department noted that there were only about seven or eight major fires on the first day or so. Therefore, the fire department also was available to engage in rescue and the transportation of the victims.

Similarly, Cruz Rojas (the Mexican Red Cross) also engaged in traditional tasks although it did somewhat extend its regular structure. It was one of the major organizations involved in rescue and relief work. It established 12 first aid stations and used doctors in over 50 ambulances to provide aid; during the first day it treated over 1,000 victims. These augmented the normal four large and 18 smaller permanent medical centers run by the agency throughout the city. Furthermore, it became involved in the collection and distribution of food and clothing to over 60 shelters. However, in carrying out these tasks, the Cruz Rojas worked fairly autonomously from other agencies and governmental units.

Some other organizations, however, engaged in nontraditional activities. Almost all non-emergency governmental and many

commercial organizations were closed during the first three days. Many of their employees became individual volunteers, doing the tasks we discussed in Part II. But for a large number of the volunteers, helping behavior during the emergency period was a group or collective endeavor. They volunteered as members of a variety of public and private organizations, unions, student groups, and voluntary associations.

Given the lack of planning and coordination during the initial period, some degree of interorganizational conflict would have to be expected. Such conflict did emerge. Some centered around problems of access to secured areas and disagreement over response goals by volunteers, private agencies and various officials, particularly the Army. For example, at the rescue site of a major hospital, personnel from the hospital and volunteers clashed with Army personnel who attempted to bar entry into the site. Given the absence of a coordinated pass system among involved organizations, many volunteers were denied access. Furthermore, strong disagreements developed over the perceived priority given to the apparently contradictory tasks of rescuing survivors and debris clearance.

In sum, the picture that emerges is one of massive ad hoc and emergent organizational response behavior along side a massive assault on certain immediate problems by a mass of individual participants. During the first three days, there was little overall coordination of the organized governmental activities. The response was certainly decentralized, and some organizational conflict emerged. However many tasks were undertaken, victims were rescued, the dead were discovered, shelters were established, lifeline systems were repaired or the services provided on an emergency basis, a morgue was established, and debris began to be cleared. Most of the activity was spontaneous and generated by needs in the immediate vicinity of responding organizations and volunteers. Throughout the three day period, some of the various organizations were able to develop intraorganizational coordination, and some units, such as related departments in the DDF, the Army with PEMEX and the TOPOS (teams of miners skilled in rescue), and others began to coordinate their activities with other organizations.

## Chapter 8. Organizational Response During the Rest of the Emergency Period

The initial three day crisis period extended over the weekend. However, on Monday morning, September 23, the first steps toward a return to organizational normalcy occurred. Government ministries, agencies, banks, public transit systems, and many businesses once again began operations, in some cases of a very normal nature. There were major exceptions. For instance, schools remained closed, and would not reconvene in eight *delagaciones* for another week. The massive organizational and volunteer response to the earthquake continued. But it was now highlighted by greater coordination, clearer task allocation, and a consideration of longer range problems.

From approximately the third day until the end of the two week period, coordination among responding units increased steadily. By the third day, the CME was functioning. It was publicly announced that major responsibility for coordinating the response within the city resided with the DDF. On September 23, the CME established the Executive Coordinator to take charge of the government of the DDF. Nightly meetings were held within the National Palace as the various subcommittees of the CME gathered to exchange information and coordinate activities.

The initial tasks remained the same, i.e., search and rescue, damage assessment, casualty care, emergency sheltering and the restoration of essential services. For the remainder of the first week these problems continued to receive the highest priority. Soon, however, other concerns came to receive increasing attention, including coordinating the massive convergence of aid that flowed into the city both from within the country and from foreign countries, the integration of foreign rescue teams into the ongoing search and rescue effort, the development of plans for long term sheltering and housing, and the eventual issues related to reconstruction.

With the increasing restoration of communication facilities and more comprehensive and accurate knowledge of the extent of the devastation, the coordination of activities improved. While some organizations, such as PEMEX, continued to operate autonomously, the integration of various units and the allocation of specific activities were heightened. Furthermore, the emergent, informal, individual volunteer action that epitomized the first few days of the response was steadily superceded by formal, organizational activity. However, one should not assume that a centralized "command and control" model of emergency management evolved after the third day. At the level of operations, the response continued to be decentralized. The broad scope of the event, the extensive demands that it created, the momentum of ongoing organizational activity, and the extensiveness of organizational

involvement at the federal, district and delegacion levels resulted in continued fragmentation. The DDF and CME were not "commanding the response" even after the first three days. They served more in the role of "brokers" for the ongoing organizational activities.

In order to better depict the variety of tasks and activities that were occurring during the two week period, we will describe a few of them in more detail. The following discussion will briefly consider some of the major tasks that were being performed and also note some of the problems associated with their completion. The list is not exhaustive and the discussion of each of the tasks is not comprehensive. It is presented as an illustrative display of the critical areas and issues that more prominently appeared during the full emergency period.

#### Distributing Information

Obviously, the earthquake occurred without warning. However, in the days immediately following the impact there was a massive demand for information on the part of both organizations and the public (some of what individuals wanted to know was discussed earlier in Part II). Information was needed about such issues as the extent of damages, the availability of services, the well being of relatives and friends, whether certain places of work had reopened, the possibility of further earthquakes, the safety of water and other secondary threats to life, and where aid and assistance could be obtained.

During the initial few days there was no centralization or coordination of the distribution of information. But there was an intense search for it. There were two major channels for information distribution: interpersonal networks and the mass media. Persons turned to their friends, relatives and neighbors to find out what was happening. They also, as we have seen in Part II of this report, became very heavy consumers of the mass media, particularly television and radio. Now these channels were not only used just by citizens; organizational officials also relied heavily upon mass media accounts and stories. As one representative from a delegacion noted, "What I learned, I got from the radio. The media people were coming to me and asking for information, but all I really had was what I had just heard from them."

Of course some organizations were distributing information. The Red Cross, for example, issued many public notices regarding sheltering, medical care and health threats. Workers in the various delegaciones presented information to reporters from the mass media. However, there was no overall coordination of this output of information and widely varying damage accounts, death totals, instructions and conflicting directives were distributed.

One official in the health sector described the problems in the following manner:

The Secretary needed information. We sought information about the number of injured, dead, victims, trapped persons, and so on. There was some confusion that we noted in the management of information. For example, the Red Cross indicated that they alone had transported around 10,000 cadavers; this never appeared in any later data. . . We thought that various organizations were withholding information, so we had to look for different ways to get it.

The other major problem was that the numbers were different on all sides. The newspaper gave some numbers, we collected others, and the official numbers were different too. So, we didn't have an exact idea or even a close approximation of the magnitude of the problem.

Given this situation, two patterns often observed in other disaster settings appeared. First, after the earthquake and particularly during the first and second days, some of the television and radio stations turned into channels for interpersonal communication. They relayed personal messages to their audiences. In addition, rumors spread through the networks of interpersonal relationships. As Shibutani (1966) has noted, in the absence of important information and at times of crises, rumors are a form of improvised news that aids in structuring the situation. Rumors about another earthquake, the likelihood of an epidemic, the exploitation of the victims, and many other issues flourished.

Within the DDF, an early attempt was made to centralize the distribution of information in the office of a Public Information Officer. By about the second day, workers in the delegaciones were told not to distribute public announcements and that all official information would come from the DDF. However, with the decentralized nature of the response activities this attempt was less than successful because the information office knew little about much of what was occurring all over the metropolitan area of Mexico City.

During the later part of the emergency period with the organization of the CME and the legitimacy conferred upon the DDF, more formal sources of "official information" developed. Of course, as in all emergencies, the distribution of all information was not fully centralized. Multiple sources of information continued to be utilized by mass media personnel and citizens naturally did not stop talking to one another.

## Damage Assessment

In the initial aftermath of the earthquake, literally hundreds of organizations engaged in damage assessment. For the vast majority of these agencies, the assessment was limited to their own resources and personnel. For example, information was gathered within the various Secretariats and departments of the federal and district governments. But this effort was very decentralized, and the sharing of information and the development of an overall picture of damage was not facilitated very much by these decentralized and limited efforts at damage assessment.

Initial attempts at overall damage assessment were given in reports presented by officials at an emergency meeting of the Federal Cabinet on the day of the earthquake. It is certain, given what we know of the limited knowledge that almost all organizations initially had about the disaster, that the information could not have been other than incomplete and inaccurate in some respects. In later days, the CNE and CME would receive nightly updates. Nevertheless, it would not be until several days before a fairly accurate overall picture of the extensiveness of the problems created by the earthquake was available. But even to this day, certain important kinds of information, such as the actual number of the people who were killed, remains unclear.

Within the DDF, two agencies independently worked on the problem of damage assessment. The Department of Public Works and the Office of Civil Protection both undertook the task. However, it appears that they did so somewhat independent of one another. Representatives of these organizations in their interviews made no reference to the work of the other. Given the magnitude of the event, the problems of communication, the difficulty of physical movement in the damaged areas, and the decentralized nature of response activities, this situation is understandable.

## Search and Rescue

Search and rescue activity began immediately after the earth ceased shaking. As we have noted previously, thousands of volunteers and many organizations eventually engaged in this task. The activity continued for about two weeks at a variety of sites; however on September 26, the CME announced that the possibility of finding more survivors was exhausted. The great majority of those who survived, of course, were rescued during the first day.

This activity began in a mass, decentralized assault by individuals and a few groups who were near the points of heaviest destruction. In the first few hours, in addition to individual members of the public and military units, small groups made up of workers, students and others who had preimpact social ties with

one another, joined the effort at search and rescue. One informant from a large preimpact organization of tenants described the situation as follows:

All the people, according to their abilities, began to organize themselves and attack the rubble. But this was mostly determined based upon concrete needs, and the perception of what could be done in the immediate area. In other words, with regard to rescue the authorities could not say, "This is the one who will coordinate the matter," It was more determined on the basis of who had the best feel for the actions they proposed. If you had to move some tiles, or pile of rubble, whatever, if a suggestion made sense then that group of people would organize itself with those persons that had a certain knowledge or practical ideas on how to attempt the task. At this time there was great participation by residents and citizens. It started to become organized when machinery and different kinds of resources began to arrive. These came from authorities and various companies, like PEMEX.

This almost classic example of emergent, collective behavior epitomized the initial search and rescue activities. Through time, however, the task took on greater organizational involvement and coordination. As we previously noted, many federal and district agencies, such as PEMEX, the Department of Transportation, the Fire Department, the Metro System, The Institute for Security and Social Services for State Employees, the Secretariat for Urban Development and Ecology, and of Public Works, selected specific work sites and assumed some coordination of the rescue efforts at those locations. In addition, the MOLES (a team of volunteer miners who are trained in rescue in cramped quarters) assisted in specialized rescue activities. The nature of high rise urban rescue created the need for heavy machinery and equipment. Private contractors who worked during nondisaster periods with the various agencies supplied these needed resources. Coordination of these efforts was generally intraorganizational in nature, with each group working basically autonomously or independent of one another. However, as we discussed earlier, the Army (which had responsibility for security and access control to the sites) did coordinate its activities with groups such as PEMEX and the MOLES.

Through the following days, the voluntary search and rescue activity changed from being a primarily individual or small group and informal mass assault, to a more formal and organized effort undertaken by organizational personnel and group volunteers. The brigades of workers from the various agencies would collectively undertake the task under the supervision of construction and design experts from their units. By the end of the third day, this pattern of formal rescue had supplanted the original,

individual informal response.

In addition to the usual problems of logistics, the search and rescue tasks involved some problems of integration and also disagreements over rescue strategy and techniques. In particular, difficulties arose in integrating the original volunteer activity with the developing organizational response and in integrating the efforts of foreign rescue teams. Conflict erupted at some sites as persons who had initially engaged in attempting to rescue their friends or co-workers were denied access by the arriving official units.

The foreign rescue teams came from a number of countries, including France, Switzerland, Canada, Italy, Brazil, Germany, and the United States. Because of logistical problems, they were not able to arrive on scene until after the huge majority of the survivors had been rescued. The foreigners did possess special skills and specialized resources and worked long days in searching activity. But while they found some bodies and helped locate a few buried survivors, their contribution was very minor when seen in the scale of the massive search and rescue efforts that were undertaken by the Mexicans themselves, and initiated right after the earthquake impact. Furthermore, coordinating the foreign effort with the ongoing local rescue work was at times problematical. Problems of gaining access to sites, authority and control of operations at sites, and disagreements over strategy sometimes occurred. Finally, disagreements over the strategy of rescue arose on occasion between those favoring different techniques such as the use of dogs, electronic listening devices, and heavy equipment.

In sum, search and rescue evolved over the two week period into a structure of decentralized, relatively autonomous organizational activity at a variety of sites. No one organization ever assumed overall control of these efforts.

#### Providing Emergency Medical Care

As was previously noted, the health sector was severely impacted by the earthquake. Three of the largest hospitals in the city were destroyed and about 30 percent of all hospital beds were lost. However, it must be noted that there was no shortage of hospital beds for the injured, nor was there a shortage of medicines. The system was large enough to absorb the losses and still provide medical care.

There was little difficulty in transporting victims to medical care. Ambulances were available from a number of agencies, including the Red Cross, Green Cross, DDF, PEMEX, IMSS (Social Security) and private agencies. Many victims arrived in private vehicles and many more walked to aid. The selection of which specific medical facility to go to appears to have been based

mostly upon proximity. In addition, the Red Cross and other federal and municipal agencies established hundreds of field first aid stations. As noted by one medical authority:

Selection of treatment was by closeness to some unit that was not affected. If there was some spot of place or method of attending to patients, they went there. If it wasn't that center, it was the next nearest that had space. Yes, there was some duplication of effort, and there was concentration of resources in the affected zone of more than was needed. There were sufficient resources, but they were not distributed well at first. After the first few days, this improved.

While transportation did not create major problems, there was a lack of triage at most disaster sites.

Well, in transporting the hurt people, we lacked adequate triage. It was not done in the majority of places. They were triaged only at the place where treatment was given.

Part of the problems faced in providing emergency medical care were a lack of prior planning and interaction among the units.

The problems were in knowing those in charge of handling disaster medical aid, because we did not know them before. There wasn't any pre-disaster communication. We knew that each institution had its department for emergency response, but we were ignorant of many contacts, and of many decisions being made.

Through time the overall coordination of the health sector was undertaken by the Secretary of Health and the Secretary of Public Health. In general, however, the emergency response was decentralized. Actually, after the first three days the nature of the tasks and coordination shifted to issues of long-range restoration of health facilities, since whatever survivors were being found after that time were so few in number that they could be handled in the usual way in such a large metropolitan area as Mexico City.

#### Lists of Missing Persons and Victims

During the initial two to three days, there was no coordination regarding the obtaining of a census of a listing of victims. Many different organizations began compiling their own lists. Workers in the delegaciones, employees at hospitals, members of the Red Cross and many other organizations independently assumed this task. In addition, a rather elaborate system of informal notices placed in public areas by citizens also emerged. The task, obviously was difficult, given the parameters of the event.

An informant in the health sector described the problem:

We were gathering information in selected areas. Much of it was done through the mass media. It was at first locally done. For example, in Juarez Hospital and General Hospital they put down persons "that were working in the quake." Also, there was a list of for persons "that didn't appear," and that had not returned home. Additional lists for those "people who were found and identified," "identified cadavers," and "unidentified cadavers." So, sometimes there was information, but it was localized from that center. The Secretary of Health did not at that time have a specified department to give out and concentrate this information.

After the initial period, the task was officially assigned to LOCATEL, the Bureau of Missing Persons within the DDF. Information from the various delegaciones would be submitted to them and a daily census of victims was constructed. With the increasing legitimacy of the DDF, the task became better managed, although as we indicated earlier not even organizations had ready access to LOCATEL.

#### Handling the Dead

During the first three days the dead were handled and placed in a variety of scattered locations. For example, cadavers were brought to delegacion headquarters, some hospitals, and other sites. There was no central morgue location until the third day.

Responsibility for handling the cadavers was rather quickly assumed by the DDF and its equivalent of a Coroner's Office in the United States. This task allocation was logical, but created some problems. As one informant noted:

The movement of cadavers was carried out by the DDF. They are the agency who should have been in charge, because they have a sufficient number of medical students to have a center for the concentration of cadavers. But, this center was insufficient. So it was decided to use the Seguro Social Park (a baseball stadium) because it was in a central zone, in that part of the delegacion most affected, that contributed the most cadavers. It was near hospitals and many affected homes.

The centralization of morgue facilities, however, did not occur until the third day and the task presented a number of problems. First, there was difficulty in transporting the bodies. There were only eight ambulances available during normal time for transporting bodies, and the thousands of cadavers taxed the system. Buses were utilized as well as trucks and other vehicles.

Second, it was often difficult to identify bodies. By the fourth day of the emergency, the Seguro Social Park had received 2,600 cadavers, of which 96 percent were not identified. Six days after the earthquake the CME stated that of 3,286 bodies, 80 percent had not been identified.

Third, the large number of unidentified bodies led to problems of disposition. In the initial days the authorities attempted to cremate the bodies that had not been identified. This was stopped, after a while, because of public protest; studies of disasters elsewhere in the past and the present indicates that there is considerable resistance to handling the dead in such a fashion. Eventually the unidentified bodies were buried in a number of mass graves. This procedure in most places also usually leads to public protest (DRC has encountered this reaction in countries ranging from Iran to Italy), but there was a recent precedent in Mexico City; unidentified bodies were also given mass burial after a gas explosion and fire at a PEMEX installation killed more than 450 residents in 1984 and that too evoked no public protest according to a DRC study of the event.

#### Security and Access Control

After being quickly relieved of overall command of the emergency response, the Army was assigned the task of security and the cordoning of areas around damage sites. This activity began on the first day of the earthquake and continued throughout the emergency period.

In many disasters, the matter of access control into secured areas, often results in disagreement and conflict. This disaster was no exception. There was no official "pass system" of any kind established. Entrance was left to the discretion of the officers at the scene. As one official involved in the activity noted:

There was a system where a person had to show a document. It could be a license, a rent receipt or electricity bill; something that showed that they lived in that place. Now there were two types of risks that decided who would gain entry. In high risk areas, where buildings were on the point of falling, they did not permit anyone to enter. In the areas where there was a medium risk of falling objects, there was a possibility to enter based on ownership to remove belongings. It was the second or third day before this system was established. At the beginning, it was a mess.

While some organizations, such as PEMEX and the MOLES, reported good working relationships with the military at rescue sites, other groups expressed some dissatisfaction with the security measures. Certain organizations, such as the electrical power

department, issued passes to their own personnel that were however not recognized by the Army. We noted earlier that one delagacione had to disguise its workers as stretcher-bearers to gain entry to areas to conduct a census of missing persons.

But after the initial three days these problems seemed to lessened. It is possible that in the later phases of the emergency period, there was less reason for anyone to seek entry into blocked off areas. In any case, while no formal pass system was ever established, access controls became normalized and routinized.

### Sheltering and Feeding

Immediately after the earthquake, a variety of public and private organizations and as well as citizens attempted to help with the sheltering of those displaced from their places of residence as a result of the disaster. Collective mass shelters tended to emerge rather spontaneously as victims would gather in public areas and places close to their damaged or destroyed homes. There was no attempt to coordinate shelter locations, and many different groups became involved. As one informant noted:

The location of shelters was just by chance on the first day; by people standing in the streets in front of their homes at the beginning. People were in the streets, sidewalks, and gutters.

Rather soon, many different organizations, including the Red Cross, PEMEX, churches, and the delagaciones developed their own mass shelters. As one of our informants noted: "Everyone wanted to open shelters. It was a problem of coordination. Some of the shelters were adequate, such as the two opened by PEMEX that housed 200 people each. Others, however, lacked adequate space and sanitation."

As we discussed in Part II, the number of people who were homeless as a direct result of the earthquake is not certain but probably numbered, as a very minimum, several hundred thousand persons. A variety of mass shelter arrangements were made. The rough estimates on the actual number of such shelters established during the first few days vary from about 150 to 300. It is known, nevertheless, that the vast majority of the homeless did not use mass shelters of any kind, but instead found shelter in the homes of relatives or provided for their own housing (see our discussion of this matter in Part II). One estimate is that about 9,000 stayed in makeshift mass shelters in parks and another 30,000 may have utilized formal mass shelters; our survey data indicated that these were almost exclusively persons from the lowest socioeconomic strata in the city.

After the initial three day emergency period, an attempt was made

by the DDF to consolidate the mass shelter arrangements. The DDF managed about thirty shelters of its own in various schools, stadiums, and parks, with the managing being done by workers from the delegaciones. On the sixth day, a plan was made to consolidate the smaller mass shelters into four main and longer term public shelters. However, many of the private and informal mass shelter arrangements continued throughout the emergency period, and some even longer. Furthermore, the actual mass shelter managements and operations were left to the individual delegaciones, many of whom assigned the task to the social welfare units of their organizations.

The provision of food was similarly handled. A variety of public agencies, private businesses, restaurants, relief agencies and individual citizens provided emergency feeding. PEMEX, for instance, provided food for its workers, and after determining the amount of food that would be needed to feed its people, it increased the amount by 50 percent in order to be able to offer food to needy victims. Food poured into headquarters of the most seriously damaged delegaciones. The Red Cross, churches and neighborhood groups also provided meals.

Control of the distribution of food to mass shelters was coordinated by the DDF and CONASUPO after the initial three day period. Food would be brought to CONASUPO and would be distributed from the central location to the shelters. Within the Department the coordination was handled by the division of culture and tourism. There was no significant shortage of food at any time.

#### Requesting and Handling Aid

Initial requests for needed supplies and resources came from a variety of different organizations and agencies. At the federal level, the Secretary of Foreign Relations was appointed as coordinator of international assistance. This appointment was made on the second day. A few days later, a similar post was created within the DDF to handle foreign aid used within the federal district.

At the municipal level, the pattern of requesting aid was diffuse, decentralized, and uncoordinated during the first three days. Many groups worked somewhat independently in obtaining needed equipment. PEMEX, for example, because it maintained its own communication system, was able to contact many potential donors and contractors. The Red Cross and various other private agencies also made requests and obtained aid. The Secretariats of Urban Transportation and of Health were able to coordinate some of this activity for their various departments,

Tons of material, supplies, medicines, clothing, and food poured into Mexico City, demonstrating the typical convergence pattern

found in almost all disasters (Fritz and Mathewson, 1957). Also, typical was that the convergence of materials was far in excess of most of the needs of the victims, and was composed of much unusable and unneeded items. This created serious problems for collection, distribution and disposal.

For example, tons of medicines arrived although there was no shortage of medicine in Mexico City. Many of the drugs were labeled in a variety of foreign languages, which created severe problems for inventorying and storing. Similarly, clothing arrived in massive amounts, but some of it was not usable in a semi-tropical country such as Mexico.

During the initial three day period, there was little attempt to coordinate this inflow of material. Donated food and clothing would be taken to delegaciones, the Red Cross, churches and other organizations to be distributed in what ways the groups wanted.

After this initial period, however, the DDF and the Red Cross developed a system to coordinate and manage this kind of aid. The DDF established five major warehouses in the city for storing the vast amounts of materials that had arrived and were being received. Any supplies that were specifically addressed to the Red Cross were sent to that agency; all others were handled by the DDF. Volunteers worked with the Red Cross and DDF personnel from a variety of departments in the inventorying, distributing and disposal of the material. From the warehouses, the usable and needed supplies were distributed to victims at the various mass shelters that were established throughout the city.

One informant from the Mexican Red Cross described the activities in the following manner:

All this food, clothing and materials was arriving. A time came when the hospital could no longer handle all the stuff. When that happened, Sears allowed us to use its garage as a new collection center. We went there with a number of volunteers and opened the storage place. In one area we put medicines. There were doctors and volunteers who knew how to classify them. In another place we put clothing. We would have 30 or 40 vans per hour being driven out of there loaded with food, clothing, etc. to the destroyed areas. By the fourth day, this site was inadequate, and we had to move out into the parking lot. This continued for some time.

Although this flood of aid eventually tapered off, the task of handling the supplies involved thousands of people and continued over months.

## Integrating Volunteers Into Organizations

The massive and extensiveness nature of volunteer helping behavior in the earthquake has been noted at many points in this report. As was mentioned, as opposed to viewing this behavior as purely or only an individual, mass assault upon earthquake problems, it is important to realize that a significant portion involved collective, organizational volunteering by people who worked as organized units with their day-to-day, fellow coworkers.

Those organizations, such as the Red Cross, the delegaciones, and certain units of the health and transportation sectors that attempted to utilize individual volunteers, had problems in training, controlling and coordinating the actions of such workers. Previously we noted that one informant from a public works agency commented that it was difficult to equip and utilize all the volunteers who wanted to assist. Similarly, an informant from a major relief agency made the following observations:

What we first did was try to have some control of all the civil volunteers who joined us. But this was not done the first day. That day was actual chaos; not on the part of the leaders and directors, but on the part of the middle ranks. At this level we followed the directions of our President, but in going down the orders were diluted a lot since there was an enormous problem. You see we had lots of civilians who, due to their lack of training, would do as they wished at every particular moment. They would never see the necessity of getting organized and, thus, we happened to have lots of civil volunteers who were categorizing clothing and medicines, when we had nobody cooking.

So the first thing we did was to control those people and see how many of our own volunteers we had, as well as volunteers from outside the organization. Then we had to decide where they might be needed, and after that, to control them. We finally had all the volunteers meet on the afternoon of the second day at two sites to get organized.

This pattern has been observed in a number of previous disasters (Dynes, 1974; Mileti, Drabek and Haas, 1975:110). Many organizations simply do not plan and prepare for the integration of volunteers into their activities, and when massive numbers of helpers suddenly appear, coordinating their efforts can become difficult. It is interesting to note that a number of responding organizations simply side stepped this problem by not utilizing any volunteers who were not part of their everyday organization.

In sum, in this chapter we have described the structure of the organized responses and discussed some of the major tasks that took place during the first two week period of the emergency. Through time, a greater coordination of the effort was achieved through the activities of the DDF and CME. Tasks became more clearly allocated, a more established interorganizational division of labor emerged, and intraorganizational coordination increased. Also, coordination among units at the same levels and engaged in the same tasks increased, while overall vertical coordination remained fairly loose.

Nevertheless, the overall response was and remained basically decentralized even in the later stages of the emergency period. In this respect, the decentralized response was not inconsistent with the regular, day-to-day operations of the DDF. It is a massive and complex organization that normally operates in a fairly decentralized fashion. We shall return to a discussion of the relationship between organizational everyday behavior and emergent disaster behavior in the following chapter where we consider some of the implications of our general research findings.

## PART IV: CONCLUSIONS

In this section we present the general research themes and implications of our study, the applicability of our findings to possible similar earthquake and other disaster situations in the United States, and what might be fruitful priorities and questions in a social science agenda for disaster studies in the future.

### Chapter 9. General Themes and Implications

In the earlier pages we made a number of specific statements about individual and organizational behaviors in the Mexican earthquake that were derivable from delimited sets of empirical data. In this chapter we set forth more general conclusions or themes that cut across a number of our particular empirical findings. Individual behavior is first highlighted, then organizational behavior is discussed. In the process some implications are noted.

#### Individual Behavior

1. Small, even minuscule percentages, translated into large or huge absolute numbers with respect to personal behavior in the earthquake situation.

While this possibility is a very logical one, the findings from this study dramatically illustrate the importance of the point in very concrete terms. Maybe only one percent of people did or thought something, but that meant several hundred thousand individuals reacted in the same relative way. To focus only on percentages or only on absolute numbers will convey radically different pictures of the situation.

In the main, this is not an observation that has often been made in the past. Only on rare occasions have disaster researchers noted the possible theoretical insignificance but operational importance of small percentages (see, Quarantelli, 1985: 199-200). We can see that this can be true in two ways. One, as in the Mexican situation when the base number is very large even tiny percentages, that are by explicit criteria statistically or theoretically unimportant, can extrapolate to very large absolute numbers. The other instance is when the absolute number is itself relatively low, but because of cultural values involved the phenomena can become important for symbolic reasons (e.g., burying the dead properly, see Blanshan and Quarantelli, 1981; treating the seriously wounded quickly, see Quarantelli, 1987; protecting children, etc.). The study in Mexico City suggests that those who study disasters ought to

consider more seriously, than they have tended to have done so far, those findings which are not significant in one sense for most theoretical and research purposes.

In fact, there may be a very important practical implication in this thematic research finding. It is that the discrepancy between percentages and absolute numbers with respect to behaviors of individuals may become progressively more important, the larger the disaster as well as the larger the population base involved. In a small size (impact and population wise) community disaster--the occasion which is the mode in the studies undertaken in the United States (see the Inventory compiled by Quarantelli, 1984a)--the absolute numbers for much behavioral phenomena may actually involve only literally a handful of people. It is easy therefore to ignore such a possibility in disaster planning and not to notice it in the managing of the more typical kind of community disaster. However, if the disaster is very large and in a densely populated area, the matter will have to be operationally addressed both in preparedness planning and disaster response.

2. The social class or socioeconomic status of persons was a rather consistently differentiating factor in the behavior of persons in the disaster.

If there was one background factor in both surveys that stood out of those on which we had data, it was social class. It affected a wide range of phenomena, for example, from the degree of initial earthquake impact that was suffered to how the individual felt about a variety of disaster related tasks activities that the government had undertaken during the year. While socioeconomic factors were not important in everything, they seemed to differentiate to a degree on most matters.

In one sense the observation that social class was an important differentiating factor should have, at least for sociologists, almost been expected. However, socioeconomic differences conceptualized in any of the variety of different ways social scientists conceptualize them, have almost never been incorporated into studies by disaster researchers, at least by those from the United States. In fact, Taylor notes (1978:276) that it is probably a valid criticism that the research "has been primarily undertaken on white, middle-class persons and groups". (For the rare exceptions regarding social class, see, e.g., Drabek and Boggs, 1968; Turner, 1976:182-183; and Quarantelli, 1980:126). Reconfirming this, Drabek (1986) in his recent inventory of the literature cites only about a half dozen studies that use socioeconomic variables in their data analyses. While some foreign theoretical criticisms of what has been called the North American disaster research tradition have alluded to the lack of socioeconomic factors in the studies done (see for example, Schorr, 1987, for summaries of

this point of view expressed by German critics), very few studies done anywhere have used social class as either a descriptive or analytical variable.

The Mexican study clearly suggests that much more attention ought to be paid to social class differences among victims, again for both theoretical and practical purposes. From a theoretical point of view, using social class differences both descriptively and analytically should provide a much more powerful research variable than standard demographic dimensions such as sex, age, education, occupation, etc., which are not as intrinsically sociological as the socioeconomic status of the person. From a practical viewpoint, for example, emergency managers who have a homogeneous social class population may have rather different sets of disaster related problems of a social nature to deal with, than those in a community with a very heterogeneous social class composition.

3. Individuals expressed relatively little dissatisfaction with both the short-run and long-run organizational efforts to deal with the earthquake consequences.

The Mexicans in our survey did note there were a variety of problems or difficulties in the immediate and longer run post disaster organized efforts to cope with the earthquake. They did not perceive or assume that everything was perfect; far from it. But what stands out is what might be called an unwillingness to particularly blame any officials and/or groups for failures to solve the problems or inability to handle difficulties. This was true whether perceptions and evaluations were of the general organized response or the activities of specific organizations or particular tasks.

Such a lack of complaining about the formal organized efforts to cope with a disaster is not consistent with much of what is reported in prior research. A general theme in the literature instead is that in the post impact period (and sometime even going back to organizational behaviors in preimpact times) there often are complaints and condemnations about what was done or not done, and frequently specific organizations are singled out unfavorably (e.g., in the 1960s the Red Cross was in many disasters very negatively evaluated for its shorter run organizational performance; see Taylor, Zurcher and Key, 1970--for a more positive evaluation at the present time of it and many other responding groups see Rossi et al., 1983:165). In Mexico even though several organizations carried with them into the earthquake period a negative preimpact popular assessment, there was not a great unfavorable evaluation of both immediate and longer run performances (at least in percentage terms).

At the very least, the study in Mexico indicates that it should not be automatically assumed that when there are organizational

problems in responding to disasters, there will be very negative evaluations of the involved groups. Of course this observation raises perhaps more important questions: what are the conditions which will generate such a reaction in a population, and will this kind of reaction by individuals be found in all societies? These are issues which we will address later in our discussion of the general applicability of our findings in the Mexican earthquake to other disastrous social occasions.

4. There was no noticeable increase in perceptions of disaster related problems or dissatisfaction with the general efforts to deal with them from the time of the initial impact up to the year's anniversary of the earthquake.

Apart from the matter of relative absence of complaints about the organizational response as just discussed in the previous thematic finding, it was also noticeable that there was no general increase in negativism about problems through time. It might be understandable that victims could ignore the many problematical aspects that arose right after what might be considered a rather unexpected disaster, but this attitude of insouciance would seem less likely if problems persisted or emerged in the later recovery and reconstruction periods. But in the Mexican earthquake aftermath, there was no noticeable increase in the perceptions of problems or in the evaluations of how they were generally handled. The "bitch phase" in the recovery phase as some have phrased it (Drabek, 1986:229) did not appear. In fact, with respect to some problems, there was more positive evaluations of how they were handled a year after the disaster than immediately afterwards.

The prior research literature suggests that while there might be a high degree of social consensus and community solidarity at the emergency time period of disasters, in the longer run a more negative converse reaction will appear (Quarantelli and Dynes, 1976; see also Form and Nosow, 1958:118; Bates et al., 1963; and Mileti, Drabek and Haas, 1975:107). To some extent the political demonstrations that occurred in Mexico City in the weeks and months following the earthquake, seem consistent with the idea that there will be a post recovery time period increase in attribution of problems, a growing disillusionment with the assistance provided, and/or the emergence of a conflict orientation. However, our survey data failed to find that in the population as a whole that there was in the recovery period the development of many negative or unfavorable attitudes, major disappointments with how earthquake related problems were handled in general, and/or the assignation of blame for the problems on something or someone.

While the empirical findings are a clear indication that individual negativism or unhappiness will not automatically appear in the recovery stage after the so-called "honeymoon" phase of a disaster impact, they do raise the interesting question of why and when it will occur. We will discuss two of the more obvious possible answers in the next section of this report, when we will consider if the problems were handled relatively well or if sociocultural factors made the population fairly accepting of whatever occurred.

5. The earthquake-related sheltering and housing of people appears to have been not as problematical as the great extensiveness of the activity might have suggested.

Our survey data indicated massive movements with respect to sheltering and housing. Not only were evacuees (and others who moved) absorbed into the homes of kin, but they were housed for relatively long periods of time. Particularly noticeable also was that there was little expression of overt dissatisfaction by either the large numbers of movers or the households which received them. Most of those involved in the Mexican situation seemed to treat the whole process with considerable equanimity.

The previous literature indicates that while those forced out of their homes by a disaster will initially be taken readily into the houses of relatives and friends, there is a strong tendency for the welcoming attitude to wear out relatively quickly (see Quarantelli, 1984). This has been observed as far back as the studies done on long run evacuation in the Holland flood of 1953 (Lammers, 1955). This does not seem to have occurred in Mexico. Furthermore, friends in Mexico City appear to have played a lesser role in sheltering and housing than has been suggested in the literature (e.g., "The more severe the impact of a disaster on a family, the less likely will that family rely solely on extended kin for recovery aid", Bolin 1976:275; also Bolin and Bolton, 1983).

We have additional confirmation in this study that victims of disasters, if necessary, will find their own housing. But we suspect that the atypical lack of complaints all around about the situation may stem from two factors somewhat specific to Mexico. There is a severe housing shortage in Mexico City on an everyday basis and apparently people are used to having to help out relatives on that matter. It is also possible that the relatively easy acceptance of what could have been a major source of problems and derivative difficulties has to do with certain sociocultural values in Mexican society, a point we shall discuss again later in the section of the report on the applicability of these findings to possible similar situations in the United States.

6. The individual volunteering pattern was quite complex.

Differentiation characterized the volunteering in the Mexican earthquake. In absolute number there were many volunteers both in the immediate post impact period and during the year following the earthquake. On the other hand, the vast majority of residents of Mexico City never got involved in volunteering activity of any kind in the first three weeks. In the emergency time period males did more volunteer work than females, but upper class persons volunteered considerably more than lower class individuals. Later volunteers were not differentiated on those two social characteristics. The relatively younger but not the youngest undertook the most early volunteering, and volunteers generally were not from the most devastated areas after the first few hours.

This differentiated pattern of volunteering are not what on-the-scene popular beliefs or mass media stories suggested. More important, the findings strongly indicate that the current research literature on volunteering may be too simplistic in its observations. Apart from the existence of a very complex and differentiated pattern of volunteering behavior, specific generalizations are challenged by the results of this study. For example, only in a very limited sense was there a "mass assault" (as it has been called, see Drabek, 1986:223) of individuals in this disaster. The very young have sometime been singled out as a potential great pool for individuals who could work at disaster relevant tasks (Quarantelli, 1981) or have been emphasized in mass media accounts (Phillips, 1987), but they were not a major source for volunteers in this earthquake disaster.

There are a number of implications from the complex and differentiated pattern of volunteering we found (as we have described it earlier there was not just the individual volunteering we are discussing at this point, but also the volunteering that occurred because persons were members of groups such as unions that as collective entities volunteered--a point we shall rediscuss again later under organizational implications). At the theoretical and research level, for instance, it is clear there needs to be much greater work done on clarifying and specifying the who, when, what, and where of volunteering (for an effort to typologize volunteers including group ones, see Dynes and Quarantelli, 1980). In fact, the very concept of volunteer requires considerable theoretical attention so meaningful differentiated research on the topic can be undertaken. At the practical or operational level, it is also obvious that planning for the mobilization and use of volunteers needs to be far more sophisticated than it has tended to be, for example, in recognizing that volunteers in the early phases may be more socially differentiated than volunteers in the later or recovery stages of massive disasters

such as occurred in Mexico City.

7. There was extremely heavy mass media usage in the aftermath of the earthquake.

By almost any criteria that could be used, the population of Mexico City turned very extensively to using the various mass media sources available right after the impact of the disaster. Audience numbers were massive and the amounts of time given to attending to the mass media depiction of the earthquake was equally impressive. It almost appears that at certain hours in the first few post-impact days that except for those directly responding to the effects of the earthquake (such as those engaged in search and rescue, or victims moving to the homes of their relatives), practically everyone else was listening to a radio set, watching a television screen, and/or reading a newspaper. In one sense of the phrase, there was a "mass assault" on the mass communication outlets in the metropolitan area of Mexico City. Furthermore, there were relatively few complaints and little dissatisfaction expressed about the media coverage of the disaster and their depiction of events.

These observations on media use document what up to now has mostly been derived from anecdotal kinds of impressions rather than from systematic empirical data (as noted by Kreps, 1980, but for research that has looked at audience behavior see Ledingham and Massel-Walters, 1984; Beady and Bolin, 1986; Perry and Mushkatel, 1986). Furthermore, on the whole, the population of Mexico City seemed generally satisfied with what they obtained from the mass media sources in both the short and long run--a matter about which the general research literature has little evidence (although some Japanese studies have attempted to ascertain the views of the audience with regard to what the mass media provided in disasters; see Okabe and Quarantelli, forthcoming). In fact, if anything, there has been the implication in the literature that the public is negative over some of the mass media content produced in disasters (see summaries in Drabek, 1986: 166, 336-338). This study in Mexico has started to provide an empirical underpinning for our understanding of the mass communication behavior of individuals in major disasters (however, for a report on very systematic research on the activities of mass media organizations in disasters see Wenger and Quarantelli, forthcoming).

From an operational or practical viewpoint, it seems that it is possible in certain crisis situations for the mass media to provide disaster content which the general population does not find wanting. Unfortunately, since in the main we could not do any content analyses of what was reported, we can make no link between the overall satisfaction expressed and what was actually broadcast, telecast or printed. However, this case

does illustrate that disaster planners and managers probably should not have any doubt that those who experience a major disaster will turn, if it is functioning, to the community mass communication system.

8. Individuals did not learn very much on how to prepare for future disasters from their experience of the earthquake.

At a superficial level, residents in Mexico City appeared to have somewhat learned from the experience of the earthquake on how to prepare for and react in future disasters. But in reality we could see little evidence that much of relevance had actually been incorporated into everyday personal and household behaviors. Even knowledge of what the government had done by way of preparedness for future disasters was also almost nonexistent. Certainly there was no noticeable tendency to leave the area which was recognized as dangerous.

This general lack of learning by individuals is an observation fairly consistent with what has been previously reported in the literature, although the year long period we studied is by far a much longer time span than has usually been examined in most other research (see summaries of studies in Drabek, 1986:349-360). That disaster victims will remain in an endangered area has also been long recognized (White, 1974). While some relevant disaster related preparedness learning does sometime occur, it is relatively rare (except for the learning of cues that might indicate the possibility of the future occurrence of a similar disaster event). Therefore, it would appear probable that just as organizations usually seem to learn very little from only the experience of undergoing a disaster (see Warheit, 1968; Anderson, 1970), so do individuals also fail to learn lessons for future preparedness if that is all that happens.\_

While the thematic observation stated here is not new, it was derived from a far larger than usual disaster where a possible different result might have been anticipated. But it seems that just as the dramatic nature of a disaster is not enough to occasion learning, neither is a bigger disaster per se likely to do so. This reinforces the need to examine further why a disaster experience contributes so little to personal learning. Our major hypothesis drawn from DRC studies of organizational learning is that actual experience needs to be reinforced by a supportive and directive social context (see Ross, 1978). If this proposition is validated by further research, it will give to disaster planners some guidance on how they could build upon the experience of citizens in community disasters to better prepare for future ones. There is little in what we found in our Mexican study to encourage planners and managers to think that if people in their localities undergo a disaster, they will automatically be better prepared for future ones (in fact, there is the possible dysfunctional consequence of a "near

miss", having survived a disaster there may be the feeling there is no great need to prepare for another one).

### Organizational Behavior

We now turn to a discussion of general themes from our findings about organizational behavior in the Mexican earthquake.

1. The organizational response was massive, complex, and decentralized; it involved limited vertical interorganizational integration with some horizontal integration emerging among organizations engaged in similar task areas.

Through the first three days of the emergency period, the organizational response was dominated by independent activity. It required about three days for the DDF to assume legitimacy and some coordination of the activities and for the CME to become operational. During this initial period, extraordinary activity was undertaken in the areas of search and rescue, sheltering, casualty care, and the restoration of services by hundreds of public and private agencies. However there was no overall coordination of this massive action.

For the remainder of the two weeks following the earthquake, this pattern was modified in degree, but not in kind. Thus, the DDF did assume more of a coordinative role and the nightly meetings of the CME were critical in the delegating of tasks and the sharing of information at the highest levels of the metropolitan structure. However, what is sometime called a "command and control" structure (see Dynes, 1983) was not established, that is centralized control of decision making and operations from the top of the system involved. Illustrative of this is that no central emergency operations center staffed around the clock was established. The DDF served more of a "broker", that is, identifying problem areas, providing information, locating resources, and facilitating contacts between different groups. What came into being was what earlier researchers have called an "emergent resource" model of operation (see Dynes, 1983).

An inherently decentralized response pattern remained, although we did find that pockets of segmental coordination occurred among some organizations working at the same tasks. This general observation is not consistent with some statements found in the disaster literature. For example, it has been proposed by McLuckie (1975:8) that in more centralized societies, emergency management tends to be dominated by a few positions, and that these positions and organizations are high in the political system. Anderson (1969) hypothesized that there is a tendency for military organizations to assume a larger role in disaster response in centralized and developing countries. Others, such as Clifford (1956), have also observed an increase in centralization in organized response activities in disasters outside of the United States; in fact, he was reporting on a

flood along the Rio Grande River and an hurricane disaster in Tampico, Mexico, about three decades ago. Kennedy (1982) also, after looking at the organizational activity and the military in a 1965 earthquake in Chile describes a rather centralized and from the top operation.

Why instead did a decentralized response occur in the Mexico City earthquake? A number of factors are relevant. First, the demands created by the earthquake were extensive, with major damages to the infrastructures and resources of major governmental agencies. This was unlike many disasters where the key organizations are directly untouched and remain available to be mobilized and used in whatever way is necessary. Furthermore, while the damage was diffuse throughout the metropolitan area, it was concentrated in certain neighborhoods, blocks, and streets, all of which fostered immediate action on the part of local, independently operating groups.

Second, the nature of the disaster precluded the implementation of the military disaster plan, DM-IIIE. Therefore, the response of almost all organizations was not guided by any prior planning, exercising or experiences. Authority and coordinative action, like most other aspects of the response, had to be improvised. At the system-wide level, this coordination took time; in this case, approximately three days. Intraorganizational coordination among autonomously responding agencies, however, was easier.

Third, the pattern of relationships that emerged after the earthquake were not inconsistent with the usual or everyday patterns within the DDF and Mexico City. During routine times, public organizations and agencies within the city operate with considerable autonomy; it is a normally decentralized system. It is interesting to note that when coordination of action did occur among agencies, such as that among federal, state and district agencies working to repair the water system and supply emergency water, it was often among groups or subsections who did have contact during normal times.

The practical implication of our observation here is that when officials are faced with a massive disaster that seriously disrupts lifelines, directly impacts responding agencies, and is diffuse in its impact, a considerable period of decentralized, organizational action should be anticipated. Planning activities should be based on attempting to develop a degree of self-sufficiency among potentially responding unit and formulating measures to coordinate this initial response through time. What some planning agencies (e.g., BAREPP and SCEPP) are attempting to develop for earthquakes in California would seem to be on the right track.

From a theoretical point of view, the decentralized response observed suggests that the principle of continuity frequently

discussed in the disaster literature (e.g. Quarantelli and Dynes, 1977), needs refining. The proposition is that the social organizational structures and functions in place before a disaster will be those that will be operating after impact. There was a carryover without doubt in the Mexican earthquake, but there was also some degree of discontinuity, the general specification of which should receive future research attention.

2. The organizational response illustrates the detrimental effects of a lack of emergency planning.

The disaster and emergency management literature is replete with references to the importance and benefits of not only developing emergency and disaster plans, but in also viewing planning as a process and not just a product (Dynes, Quarantelli and Kreps, 1981; Wenger, James and Faupel, 1985; Wenger, Quarantelli and Dynes, 1987; Drabek, 1986). This case study illustrates the types of problems and difficulties that can emerge in the face of a lack of planning.

Our Mexican informants were unanimous in their observations that the lack of disaster planning presented serious problems for their organizations. Even in some groups that had done some limited, internal emergency planning, the demands of the occasion exceeded the capabilities of their organizations to respond. Almost every earthquake related task had to be improvised. Emergent, ad hoc behavior was the norm. The lack of planning seriously hindered coordination among responding organizations. Except in those cases where agencies had normal day-to-day contact, personnel were not only lacking in knowledge about the resources and capabilities of other organizations, they also did not know who to contact to gather that information and coordinate their response.

The implications of these findings are obvious. While good disaster planning will not ensure that, for example, timely damage assessment, efficient casualty care, effective resource allocation, adequate intra-and-inter-organizational coordination, and the rapid restoration of services will occur in the aftermath of a disaster, its absence will compound community difficulties and problems. An emergent and ad hoc individual and collective response may eventually cope with the situation as it did in Mexico City, but as the saying goes "that is doing it the hard way".

3. The organizational response was dominated by the activities of extending and emergent organizations.

A useful typology of organizational response to disasters was developed in the early days of DRC (see Quarantelli, 1966; Dynes and Quarantelli 1968: 417-423; for derivable propositions from the typology see Stallings, 1978). According to this

typology, there are four types of organizations that respond to disasters. First, there are established organizations who engage in their regular tasks and utilize their normal structure. These are often viewed as emergency relevant organizations, and such agencies as police and fire departments usually manifest this form in disasters (of course, even such organizations may show a different form depending on the response to the disaster). Second, expanding organizations are those groups that undertake traditional tasks, but undergo an alteration and expansion of their normal structure to do so. The Red Cross and various formal voluntary groups are examples of collective entities that often change in this direction. Third, extending groups maintain their normal, day-to-day internal structure, but perform non-regular or nontraditional tasks during the disaster. For example, a construction company may become involved in debris clearance. Finally, emergent groups are organized collectivities that did not exist prior to the disaster. In a disaster, they undertake new tasks and develop a new social pattern or structure to guide their activities.

The overall organizational response in the Mexican earthquake was dominated by emergent, extending, and to a somewhat lesser extent, expanding organizations. There were very few established organizations operating. At the highest levels of authority within both the federal and district jurisdictions, new and emergent groups came into being to handle the problems of coordination of activity. At the level of operations, extending organizations proliferated, as the petroleum company, subway and transportation units, certain governmental agencies, private businesses, and lifeline groups undertook such nontraditional tasks for themselves as search and rescue, casualty care, and sheltering and feeding of victims. New, emergent, informal groups of citizen volunteers and organizational representatives undertook rescue, sheltering, and caring for the victims. A few social institutions such as the Mexican Red Cross took on the form of an expanding organization and played a major role in the response.

It is interesting to note that such entities as the military and the police, who maintained their positions as established organizations, played a rather limited, narrowly defined role in the disaster. They undertook primarily traditional tasks, namely security and traffic control.

This extensive pattern of emergent and extending organizational activity is probably the result of the lack of prior disaster planning, and the massive nature of the event which created demands that exceeded the traditional emergency response mechanisms of the city. Suddenly a crisis situation existed due to the inadequacy of existing crisis management mechanisms. The inappropriateness of operationalizing the military plan DM-IIIE and giving overall response responsibility to the Army (an

established organization) created a lacunae of established response mechanisms. Under these conditions, emergent and extending organizational activity developed to meet the pressing needs. Similar response patterns have been observed in other disaster settings (Wenger, 1978).

Some researchers have argued that the magnitude of a disaster can be gauged by the extent to which emergent and extending organizations become involved in the response. Simply put, the greater to which the response is dominated by these types of organizations, the more severe the disaster (Quarantelli, 1987). If this proposition is correct, then it can be concluded that the earthquake in Mexico City was of extreme magnitude, not just regard to its physical destruction, but also with regard to its social disruption.

There are some important implications in the varied types of collective responses that our study found in the Mexican disaster. Among other things, the observed pattern suggests that prior planning must emphasize the need for groups at times of disasters to be able to improvise, to do things they normally do not do, and/or to do them in organized ways that are not usual for the organization. Traditional established ways of doing things by usual social arrangements will not always work; the demands and needs especially of an emergency period of a major disaster often requires something different. In some case, what is required is even a new group doing new things, what we have called emergent groups.

In part, the Mexican earthquake shows that even in the absence of planning, the demands of extreme situations will force social alterations in the responses of relevant organizations. While this may be true, it does not follow that it has to be completely left up to spontaneous emergence. Good preparedness planning can anticipate what might be required and proceed accordingly. Not everything can be planned for, but many things can be forecasted ahead of time which will allow a better organized response when the need arises. Perhaps in Mexico there was eventually a relatively effective response in that most necessary emergency time tasks got done one way or another sooner or later, but in the absence of prior planning, the response was not very efficient. Clearly both effectiveness and efficiency are highly desirable in organizational and community disaster management.

4. Although there were some significant differences in the response of Mexican organizations compared to those found in the United States, the similarities in the response were more apparent than the differences.

There were some differences in the response of the organizations in Mexico City that are not typical of the patterns found in disasters in the United States. These involved such issues as

the centralization of normal authority, the role of organized citizen groups, the group nature of volunteering, and the public nature of a number of organizations that are private in the United States. We will discuss some of these features in more detail later in Chapter 10 when we address the question of the extent to which the findings from Mexico can be generalized to the United States.

However, what is most apparent are the similarities in many areas between what we observed in Mexico City and what has been found in the hundreds of studies of American disasters (Barton, 1970; Dynes, 1974; Miletic, Drabek and Haas, 1975; Quarantelli, 1978; and Drabek, 1986). Similar findings were observed in a wide variety of tasks and problems. We will note a few.

With regard to the lack of interorganizational coordination, the response in Mexico City was not unique. Similar problems have been observed with regard to emergency management in many American cities (Wenger, Quarantelli and Dynes, 1987). Similarly, the degree of coordination appears to be related to the level of disaster planning that existed prior to the event. For example, the development of interorganizational conflict involving security and pass systems have been observed in many American communities because seldom is good planning undertaken for that problem (Wenger and Quarantelli, 1988).

The massive volunteerism and the emergence of altruistic behavior that epitomized the Mexico City response and that we described in Part II of this report has also been observed in American disasters since the very beginning of disaster research (Barton, 1970). Related to this issue, the difficulty in integrating volunteer and organizational activities has also been noted in many different disasters (Form and Nosow, 1957; Dynes, 1974). In fact, even when there is planning, the handling of volunteers by organizations is not an easy matter (e.g., Dynes and Quarantelli, 1980). Practically all organizations have difficulty in suddenly incorporating large numbers of unknown persons with unknown abilities into their work force.

Mexico City experienced a serious problem of convergence of material, supplies, and personnel after the earthquake. As was previously noted, the processing of this inflow created major difficulties for a variety of the extending and expanding organizations operating after the disaster. The existence of the convergence problem has been noted in so many studies of American disasters that it has taken on somewhat the stature of a law among disaster researchers, and such emergence is expected in major disasters. One reason is that it is such a problem for specific organizations is that usually they can have little direct influence on the incoming flow, although planning at the community level can somewhat alleviate the convergence.

The patterns of shelter utilization observed in Mexico City also conform to observations made in the United States. Although, as we have described in Part II of this report, there were massive numbers left homeless, and a large number of public shelters and camps were established, the majority of the victims did not utilize them. They moved into expanded housing with relatives, or provided for their own shelter, often in areas close to their damaged homes. As has been repeatedly reported in earlier studies, except under unusual circumstances as may have been true in the Friuli earthquake in Italy and perhaps in the recent earthquake in Armenia, the handling of the sheltering of disaster victims tends to be done at the individual and family level, and organizations usually have only a limited role to play in the process.

The great majority of search and rescue is undertaken by individuals and informal groups of citizens and is underway usually before a disaster impact is fully over. This has been reported for disaster after disaster and was true of Mexico City. However, later and more organized search frequently involves formal groups and agencies (Drabek et. al. 1981). This kind of later involvement of extending organizations in search and rescue activity did occur in Mexico. This task is often not assigned ahead of time to any specific organization, and various groups that possess relevant personnel and resources therefore often become involved.

With regard to the provision of emergency medical services, the lack of triage, problems of allocating resources, and developing a coordinated response have been observed in the United States (Quarantelli, 1983). These difficulties occurred in Mexico City, and was compounded by the serious damage to medical centers which resulted in perhaps a loss of over 30 percent of the hospital beds in the city.

In presenting the above illustrations of similarities between the organizational response in Mexico and what has generally been reported in the disaster literature, we are not saying that there are no limits to the applicability of these findings to the United States. But with respect to what we have just discussed and a variety of other organizational patterns, numerous observations from previous research have been reaffirmed in this cross-societal study. Therefore, emergency planners and managers can have some confidence in whatever lessons can be learned from the Mexico earthquake, a number of which we have tried to set forth in this report. Some possible limitations on ready knowledge transfer will now be discussed in the following chapter.

## Chapter 10. Applicability of Findings

To what extent can the research findings we obtained from the Mexican earthquake be generalized to possible similar occasions in the United States? This is a meaningful question that requires some kind of answer, particularly because what we found in the study, while not altogether different from what has been previously reported in the literature, did differ in two general ways. On some matters, the observations from Mexico are simply not consistent with earlier work in the area (e.g. the absence of blame assignation to organizations for the existence of problems). On other matters, we obtained research findings from the earthquake about factors either not studied or less well examined in previous inquiries into the phenomena (e.g., social class differences). Thus, the question of how well the results from Mexico can be extrapolated to the United States is something that is very important, and is the subject matter of this chapter.

We will briefly consider three matters regarding which it could be argued that there are some significant social structural differences between Mexico and the United States. (Implicitly and more accurately we are really comparing the sociologically very complex metropolitan area of Mexico City with the social patterns that typically exist in a large city in our country). The dimensions we shall discuss are:

- (1) The general sociocultural values and beliefs;
- (2) The importance of social class; and
- (3) The organizational complexity in a metropolitan area.

Our discussion will conclude with a look at some situational contingencies and unique features in the Mexican situation.

### Sociocultural Values and Beliefs

Anthropologists have long pointed out that different societies have rather varying sets and patterns of sociocultural values and beliefs. Such factors are involved in everything from the way nature is approached, to the conceptions of reality that are accepted, to what is deemed the proper goals and ends human beings should strive for, to what is taken for granted and what is seen as open to being questioned, etc., to mention but a few matters which have been the object of description and analysis. For example, research has established that something such as chronological time is socially reconstructed in all societies and that, for example, what is defined as "slow" in one country or culture is "fast" in another, etc., (see, e.g., McGrath, 1988).

Few would doubt that Mexico and the United States have somewhat different patterns and combinations of sociocultural values and beliefs. This is almost explicitly recognized even in popular

although often rather negative stereotypes, whether this be of "Yankees" and "gringos" by Mexicans, or of "Mexicanos" and the "machismo" of Mexican males by persons from the United States. More systematic research have identified some of the key differences (see e.g., Ross, Mirowsky and Cockerham, 1983 on a greater fatalistic attitude among lower class Mexicans). There is also some evidence that perceptions and beliefs about social classes differences are sharper in Mexico than in the United States (see, e.g., Tarres, 1987).

Now some of the findings from the Mexican earthquake probably should be seen as resulting from different sociocultural values and beliefs. For example, we noted the relative absence of fault finding, blame, or attribution of problems to what specific organizations or more abstractly the government did or did not do in the aftermath of the earthquake. From the perspective of many in the United States, the reaction would seem rather passive, non-challenging of authority, if not almost a simple manifestation of a fatalistic attitude of what will be, will be. Certainly research in the United States has indicated that disaster victims tend to be more active in their reactions to disaster-related difficulties and quick to blame organizations for failures to solve problems (see, e.g., Barton, 1970; Dynes, 1974; Mileti, Drabek and Haas, 1975; Drabek, 1986).

In fact, in disasters of much less magnitude and impact than the Mexican earthquake, individuals in the United States have reacted far more strongly and negatively to what happened. Also, there is a tendency for proactive rather than just reactive responses to even just the potential possibility of a disaster in certain communities in the United States, as reflected by the numerous emergent citizen groups that have surfaced in recent years to deal with threats of and not actual impacts of disasters (Quarantelli, 1988). These differences as well as others in the two societies as far as disasters are concerned could be primarily attributed to some of the ways they differ in some of their sociocultural values and beliefs.

However, this does not mean that all that we found in the behavioral responses to the Mexico City earthquake have no applicability to similar situations in the United States. There are many similarities in response that are not affected by different sets of sociocultural values or beliefs (or there are common sets). In both societies, for example, many volunteers to deal with disaster generated tasks appear both in the short and long run, individuals around impacted sites are the initial responders in search and rescue, those needing shelter go to relatives, heavy use is made of the mass media for news about a disaster, victims learn relatively little from their experience, organizations with relevant tasks attempt to respond as quickly as they can, formal interorganizational ties

and authority/command structures are initially ignored in an effort to do something, emergent groups of all kinds appear, etc. If nothing else, the study in Mexico confirms the universality of certain kinds of response patterns, both on the part of individuals and of organizations.

What needs greater clarification is which patterns are more societally specific and which are more universalistic in nature. The Mexican study has given us some clues, as well as the very limited amount of other research that has been truly cross-societal (e.g., McLuckie, 1977; Perry and Hirose, 1983; Okabe and Quarantelli, forthcoming). But the work has hardly begun.

### Social Class

Notwithstanding that certain political ideologies deny their existence, social classes exist in all societies. However, again in contrast to particular ideological beliefs that suggest the opposite, there are substantial differences in how overtly they manifest themselves in life styles and behavioral patterns in various social systems (Kerbo, 1983; Wright, 1985). The characteristics of the social class patterns in the United States have been described in various ways (Rossides, 1976; Gilbert and Kahl, 1982), but in all conceptions there are significant differences between different strata even though there is a tendency to deny that social hierarchies and inequalities exist (Gans, 1973).

Most social scientists in both countries would agree that social class distinctions are sharper in Mexico than in the United States, and that they therefore probably are more influential in affecting overt attitudes and behaviors. In fact, as an indication of how Mexican researchers view the matter, we can note that the Instituto de Investigacion de la Comunicacion, the organization which conducted the population surveys for DRC, used socioeconomic dimensions regularly as a matter of course to stratify and weigh their samples toward the higher strata in their studies, since they deem class differences crucial for marketing and public opinion polling (personal communication). Certain kinds of hierarchical differentiations are also often used by survey and marketing researchers in the United States, but they are generally treated primarily as an issue of income and not lifestyle.

In our discussion in Part II of this report where we analyzed the survey data, we documented and stressed that social class differences consistently were involved in many of the attitudes and behaviors of the individuals we studied. Do such social differences exist in disasters in the United States and what does the Mexican data tell us about what we might not have been seeing in responses in our society? In part this is a very

difficult question to answer because social scientists in this country, although not all of them, have often downplayed class distinctions, and researchers in the disaster area have generally ignored these social hierarchical factors in their descriptions and analyses (with the few exceptions we noted earlier). Our best assessment is that social class differences are not as significant in disaster phenomena in the United States as they were in Mexico, but they are more important than has been recognized up to now.

This may appear to be an effort to equivocate on the matter but that is not our intent. Instead we are saying that the findings in Mexico point out that researchers must pay more attention to social class differences in disaster responses than we have up to now; we must do so because it will give us a much better understanding of why people act and think the way they do. Taking social hierarchical differences into account will allow us to better describe and analyze what occurs to human beings in disasters. Social class to some extent has to do with the exercise of power. A disaster context is one in which power and influence should come more to the fore (Brown and Goldin, 1973:66-105).

On the other hand, in terms of our general understanding of the United States society, we have no reason to think that the differences will be as important as they were in Mexico. It is up to future research to establish the degree of their importance. It is not whether they are significant; we can assume this, but not how much they influence actions and perceptions in disasters. (Other than to mention it, this is not the place to discuss that when we are talking of social classes we have in mind a much broader conception of social hierarchies than is used by those researchers in the United States who sometime do employ in their analyses limited kinds of socioeconomic dimensions such as income levels or occupations).

#### Organizational Complexity

Not totally independent of social class and sociocultural values and beliefs, but nevertheless analytically separable is the matter of organizational complexity. There is sometimes a tendency to think that developing countries are structurally simpler across the board than are developed countries. (The very terms used--developed and developing--reinforce this perception). This has been previously challenged even in the context of disaster preparedness planning (see Quarantelli, 1986). The Mexico City governmental situation is perhaps a good illustration of the point that specific complexity can exist in what might be seen as a general simpler larger context. All metropolitan areas anywhere in the world have very complex and intricately related sets of organizations.

But what existed in the metropolitan area of the capital of Mexico was an extreme manifestation of that proposition. Given that the area is almost certainly the largest urban configuration in the world, it is not surprising.

In addition, Mexico City is a federal district with the capital of the nation located within its environs. As we previously noted, federal and district agencies have overlapping functional responsibilities. Organizations from both levels were involved in responding to the earthquake. Furthermore, the DDF is actually a department within the federal government.

But what does this suggest about the applicability of the findings from our study about the governmental and the organizational disaster response from Mexico to cities in the United States? It indicates that caution should be exercised, particularly for the former but perhaps less for organizations. Simply stated, there is no city in the United States that has a governmental structure similar to Mexico City. Even the federal district of Washington, D.C. (the seemingly closest approximation to the federal district of Mexico City) is not the same. Local government within Washington possesses considerably more autonomy than is the case in Mexico City. In addition, there is no structural counterpart within cities in the United States to the delegaciones within the capital of Mexico. Furthermore, other cities in the United States lack having central government agencies and their resources within their midst. The response of the federal government and the role it would play in any disaster in the United States could be expected to be significantly different than was observed in Mexico City.

Given not only the issues of complexity and location, but also the mandate that emergency response in the United States is primarily a local responsibility, suggests that prudence be exercised before accepting the extrapolability of our research findings on the governmental and to a lesser extent of organizational response. However, even this cautiousness may apply more to the United States than certain other countries. Our research findings may be rather applicable elsewhere especially in developing societies where the national capital is as important and the central government is organized somewhat in the same way as is Mexico City.

Finally, we should note that while in terms of the governmental response there may be significant differences between Mexico and the United States, organizational behavior per se may be much similar. Along certain lines the organizations we looked at, both public and private, seemed to have the same kinds of problems and difficulties repeatedly reported for public and private groups reacting to disasters in the United States (see most of the DRC publications already cited in this report).

There are universals in the behavior of organizations that cut across social systems, and this should be as true in the disaster area as in any other area.

Furthermore, some of the behavioral differences that we think we are seeing in the Mexican situation may be more a matter of tremendous organizational complexity in urban areas than of cross national or cultural dissimilarities. While undoubtedly the Mexico City area had a vast variety of intricately linked organizations at different levels, it is doubtful, for example, that too many would claim that the organizational complexity in many large urban complexes in the United States is qualitatively that much simpler. Would not a response in the Los Angeles metropolitan area be affected by the massive number of organizations in that social setting? Put in a more technical social science way, the density of numerous, intermingled and labyrinthinely related organizational entities in metropolitan areas may be more important in disaster preparedness and response than the sociocultural differences between the larger societies in which the organizations are embedded. Social structure sometimes is more influential than cultural values and beliefs.

#### Situational Contingencies

There were also a number of other factors in the Mexican earthquake that may also limit the transferability of our observations and conclusions. These aspects may not be and are probably not unique to Mexico, but they are different from what might be anticipated in the United States if not elsewhere. In some ways, what we will note can be thought as being primarily situational contingencies, although in a basic sense they are rooted in other characteristics of Mexican society.

First, there were very few fires as a result of the earthquake. The activities of not only the fire department, but many other organizations, could be significantly different in the United States where a much greater number of fires could be expected in a similar kind of earthquake. In fact, Japanese researchers looking at the Mexico City earthquake indicated they believed the relative absence of fires was one major difference in what they anticipated in a similar kind of disaster in Japan.

Second, there was a greater involvement of group volunteers such as student groups, unions and work place groups, citizen organizations, and political groups in the disaster response than is usually observed in the United States. Some of the groups have a paternalistic nature, and for various reasons engender a degree of "loyalty". Because of this nature, much of this volunteer activity had the benefits of facilitating emergent groups and strengthening social solidarity. The extent to which this particular pattern would also occur in the

United States is open to question, although it is not unknown (e.g., DRC found in the Ft. Wayne, Indiana flood of a few years ago that teams of high schools students constituted the core of the volunteers that worked on building the levees to protect the town).

Third, because of the differing political and economic systems, many organizations in Mexico are "governmental", that in many cities in the United States would be part of the private sector. This observation applies to a wide variety of enterprises and activities including transportation and some lifeline and medical services. Functionally similar but private groups in the United States might respond rather different than did the public governmental agencies in Mexico. Again of course many other countries around the world would resemble Mexico in this pattern than they would the United States, and therefore might be expected to show the same kinds of response behaviors in disasters.

Fourth, certain unique patterns emerged in the organizational response pattern in Mexico City that should not be as readily expected in the United States. For instance, PEMEX played a major role in the disaster and undertook a wide variety of tasks, almost all on its own initiative. Because of its massive resources (and lack of significant damage to its own operations and facilities) it could act the way it did. Most communities in the United States generally lack such huge, resource rich organizations and it is also difficult to see many even large corporations taking the lead role PEMEX did in the earthquake. Much of the corporate level disaster planning that is occurring in such areas as California seems to assume that the major responsibility of such organization is to restore its own functioning and taking care of its own workers, rather than helping out in the larger community.

Fifth, even though the level of disaster planning is still deficient in many cities in the United States (see Wenger, Quarantelli and Dynes, 1986), most of them have prepared better for disasters than did Mexico City, at least relatively speaking. Thus, it is possible that the extremely decentralized and initially uncoordinated response that appeared in the Mexican earthquake would not appear in the United States. This would be especially true in those communities that have already learned one of the most important lessons from this disaster, namely that planning can make a difference.

We have in this chapter stressed some of the more important social differences between the United States and Mexico in order to indicate the use of caution in using our findings in one country being directly applied to another. However, as we indicated in the previous chapter, there are nonetheless

lessons that can be learned from the Mexico City earthquake. Even learning that something can not be easily transferred from one society to another can be a valuable lesson, although we do think there are some more positive and direct lessons that can be applied from the Mexican disaster to preparing for and responding to disasters in the United States.

## Chapter 11. Future Research Agenda

In this chapter we discuss three implications from what was done in Mexico for future studies in the disaster area. One is what our work suggests both positively and negatively about other cross-societal research which might be undertaken. Another is that our study further reinforces the value of thinking in generic rather than agent specific terms. Finally, however, there might be some aspects of disasters occurring in urban areas in the future which require more attention than they have been given (or put another way perhaps the social setting of the disaster will become even more important than the physical disaster agent).

### Cross-Societal Studies

There are both negative and positive implications for future cross-societal studies from the work we did. On the one hand, there are obvious theoretical and practical benefits from such kind of research especially if done in close collaboration with colleagues from the other country. On the other hand, it is important to note that some of the kinds of difficulties which have been suggested as being likely to appear in such studies (Quarantelli, 1979), did surface.

The close collaboration between the Mexican researchers and the DRC staff was beneficial in many ways (we think for both sides but we will here primarily discuss it from our perspective). For one, it is very probable that the kind of good social science data we obtained, whether this be in terms of the survey results or the organizational interviews, could not have been collected other than by Mexicans. An earlier DRC study of the chemical explosion just outside Mexico City in 1984 which used only researchers from the United States did collect data, but the field work encountered all kinds of resistances and much of the information obtained proved highly suspect for analytical purposes.

Our Mexican counterparts also provided considerable guidance on the realities of what could or could not be done in the context of Mexican society and Mexico City, and the officials and the organizations in the capital city. Their assistance prevented us from having unrealistic research goals and wasting time, effort and resources on unreachable study objectives. This was particularly true in the early stages of the work.

The collaboration with the Mexicans also allowed us to better analyze the data that was collected. They could and did provide the social context that DRC staff members did not have as outsiders to the society. This was accomplished through a number of informal meetings and a somewhat formal briefing.

On the opposite side, cross-societal collaboration with others is costly in terms of time expenditure (let alone that as said earlier, that there may be different social time frameworks). This is apart from any intellectual differences; communication whether by phone or mail from one society to another can be very time consuming and personal contacts may be restricted by cost factors. Different conceptions about social science research--which partly reflect the societies from which the researchers come--may also slow down the reaching of consensus on the research design and how it is executed, particularly when one party primarily gathers the data and the other mostly undertake analysis. Also, there are inevitable and to some extent unresolvable difficulties in the translation of certain questions used in field instruments or in answers obtained; for some words and ideas in one language there are no equivalent meaningful terms in the other language. Even when there is the best of cooperation and good will on both sides, as was true in our study, there are the above issues in cross-societal research which will affect both the quantity and quality of what can be done.

However, on balance, it should be obvious that we think that cross societal studies can both be done and are worthwhile doing. Even with some of the difficulties DRC had, because of the collaboration that Mexican researchers and some officials provided, we obtained good data for most of our purposes. While in one sense the value of what DRC accomplished by way of research results has to be left to the judgement of others, we have said enough in the previous pages to indicate that in our view the study was more than worthwhile; many significant and unexpected findings that have theoretical and practical implications have been generated.

#### Agent Specific or Generic Studies

Our study of course was about the reactions to a very specific disaster agent, namely an earthquake. But the question we want to raise is whether what we found in terms of our research findings were that agent specific. In general, we would say that the answer is in the negative.

The problems that were created and occasioned the most difficulty have been observed in the response to many different type of disaster agents, natural and technological. There were problems in search and rescue, sheltering, handling the dead, transporting and treating the injured, convergence, and interorganizational coordination to mention just some. But the difficulties that were found were not primarily the result of the physical damage and destruction that an earthquake creates, but of the social setting and social situation that existed.

What was studied was an earthquake disaster, but it probably was the magnitude of the event rather than the type of agent that best explains our findings. Our research observations and conclusions would appear to be relevant to any broad scoped, rapid onset event that allows for little or no forewarning and that has significant destructive potential. Whether "natural" or "technological" in nature, similar individual, group, organizational and community behaviors and problems can be expected to occur.

What needs to be examined is the extent to which cultural and organizational differences in the structure of urban areas influences the response of organizations to similar, major events, such as those just described. Only when these cross societal and cross cultural studies are undertaken, will the lessons from the Mexico City earthquake be able to be placed within their proper perspective.

#### Urban Studies

The earthquake we studied occurred in probably the largest urban complex in the world, and in a city which many believe will have over 20, 000 000 population by the turn of the century, about a decade off. But in the same time period there will be dozens of other cities which will not having as many residents will nonetheless be huge metropoleis. In some respects, therefore, Mexico City and its handling of disasters might be thought of as a research prototype for the future. Put another way, disaster researchers need to consider the urban studies they need to conduct for these social settings of many important disasters in the future. Any realistic assessment has to be that there will be more and worse disasters in the decades ahead (Quarantelli, 1988).

We think that Mexico has provided some cues. Disaster researchers should anticipate that they will have to study very large and almost always very heterogeneous populations. This will pose some methodological challenges particularly if financial resources for disaster studies do not significantly increase, for in general the larger the study the more costly it will be to undertake. However, the real issues that need to be addressed will be theoretical and substantive ones. How does a researcher conceptualize these vast communities of the future where legal boundaries will have little meaning? Who are the relevant groups for studying preparedness and response when there are multiple organizations within organizations, and multi layers of organized and unorganized groups within the metropoleis of the 21st Century? In fact, what will be a disaster in such communities given the tremendous resources they have just for everyday needs and demands? These are simply a very few illustrative questions of the many that will

need to be raised for improving research into the urban disasters that will occur in coming years.

#### A Postscript

In conclusion, we should note that while the inhabitants of Mexico City reacted well and the organizations in the metropolitan area did what they could, this was not a catastrophic occasion. The disaster was a major one and worse than appeared on the surface. Nonetheless, the earthquake did not totally disrupt the everyday community behavior of Mexico City in the way that, for example, the Tangshan, the Managua, the Guatemala City earthquakes in recent times, or the San Francisco, Messina or Tokyo earthquakes in the past, completely disrupted the everyday activities of the cities involved. They had catastrophic disasters; Mexico City did not have a catastrophe. Therefore, whatever other lessons we draw from the research results from this study, we ought to keep in mind the relative limitations of the disastrous situation we studied. The earthquake in Armenia in late 1988 is probably a better candidate for learning from a catastrophic disaster. To say this is neither to diminish the considerable human suffering, physical destruction and social disruption that occurred in Mexico, nor to deny the valuable lessons that have been learned from the research on what happened in Mexico City. What happened was unfortunate, but we hope that we and our Mexican research colleagues were able to salvage something worthwhile nonetheless.

## REFERENCES

- Anderson, William  
1969 "Social Structure and the Role of the Military in Natural Disaster," Sociology and Social Research 53:242-253.
- Anderson, William  
1970 Disasters and Organizational Change. Newark, DE: Disaster Research Center, University of Delaware.
- Barton, Allen  
1970 Communities in Disasters. Garden City, NY: Anchor.
- Bates, Frederick, et al.  
1963 The Social and Psychological Consequences of a Natural Disaster. Washington, DC: National Academy of Sciences.
- Beady, Charles and Robert Bolin  
1986 The Role of the Black Media in Disaster Reporting to the Black Community. Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Blanshan, Sue and E. L. Quarantelli  
1981 "From Dead Body to Person: The Handling of Fatal Mass Casualties in Disasters," Victimology 6:275-287.
- Bohlen, Nina (compiler)  
1986 Final Disaster Summary Report. Mexico 1985 Earthquake. Mexico City, Mexico: Office of AID, U.S. Embassy.
- Bolin, Robert  
1976 "Family Recovery From Natural Disaster: A Preliminary Model," Mass Emergencies 1:267-277.
- Bolin, Robert and Patricia Bolton  
1983 "Recovery in Nicaragua and the USA," International Journal of Mass Emergencies and Disasters 1:125-152.
- Brown, Michael and Amy Goldin  
1973 Collective Behavior. Pacific Palisades, CA: Goodyear.
- Chandler, Adrian M.  
1986 "Building Damage in Mexico City Earthquake."
- Clifford, Roy  
1956 The Rio Grande Flood: A Comparative Study of Border Communities. Study #7. Washington, D.C.: National Academy of Sciences.

- Comfort, Louise K.  
1986 International Disaster Assistance in the Mexico City Earthquake. Boulder, Colorado: Institute of Behavioral Science, University of Colorado.
- Comfort, Louise K.  
1986 "International Disaster Assistance in the Mexico City Earthquake," New World: A Journal of Latin America Studies 1:12-43.
- Davis, Charles L.  
1976 "The Mobilization of Public Support for an Authoritarian Regime: The Case of the Lower Class in Mexico City," American Journal of Political Science 20:653-670.
- David, Charles L.  
1979 "The Persistence and Erosion of a Legitimizing Revolutionary Ideology Among the Lower Class in Mexico City," Journal of Political and Military Sociology 7:35-51.
- Disaster Measures Planning Section  
1986 Report on the Investigation of the Earthquake in Mexico. Tokyo, Japan: Bureau of General Affairs, Tokyo Metropolitan Government.
- Drabek, Thomas  
1986 Human System Responses to Disasters: An Inventory of Sociological Findings. New York: Springer-Verlag.
- Drabek, Thomas and Keith Boggs  
1968 "Families in Disaster: Reaction and Relatives," Journal of Marriage and the Family 30:443-45.
- Drabek, Thomas, Harriet Tamminga, Thomas Kilijaneck and C. Adams  
1981 Managing Multiorganizational Emergency Responses: Emergent Search and Rescue Networks in Natural Disasters and Remote Area Settings. Boulder, CO.: Institute of Behavioral Sciences, University of Colorado.
- Dufka, Corinne  
1988 "The Mexico City Earthquake Disaster," Social Casework 69:162-170.
- Durkin, Michael E., et al.  
1987 The survival of people in collapses buildings. Unpublished paper.
- Dynes, Russell R.  
1974 Organized Behavior in Disaster. Newark, DE: Disaster Research Center, University of Delaware.

- Dynes, Russell R.  
1983 "Problems in Emergency Planning," Energy 8:653-660.
- Dynes, Russell R. and E. L. Quarantelli  
1968 "Group Behavior Under Stress: A Required Convergence of Organizational and Collective Behavior Perspectives," Sociology and Social Research 52:416-429.
- Dynes, Russell R. and E. L. Quarantelli  
1980 "Helping Behavior in Large Scale Disasters," in David H. Smith and Jacqueline Macaulay (eds.) Participation in Social and Political Activities. San Francisco: Jossey Bass :339-354.
- Dynes, Russell R., E. L. Quarantelli and Gary Kreps  
1981 A Perspective on Disaster Planning. Newark, DE: Disaster Research Center, University of Delaware.
- Esteva, L.  
1988 "The Mexican Earthquake of September 19, 1985--Consequences, Lessons, and Impact on Research and Practice," Earthquake Spectra 4:413-426.
- Form, William and Sigmund Nosow  
1958 Community in Disaster. New York: Harper.
- Frisch, Toni  
1986 "Rescue Mission in Mexico City," UNDRO News, January/February:5-8.
- Gavalya, Alicia  
1987 "Reactions to the 1985 Mexican Earthquake," Journal of Hospital and Community Psychiatry 38:1327-1330.
- Gans, Herbert  
1973 More Equality. New York: Pantheon.
- Gilbert, Dennis and Joseph Kahl  
1982 The American Class Structure. Homewood, IL:Dorsey.
- Gratton, Vivian G., Herbert Thier, Elia Arjonilla and Rose Melgar  
1987 "The Recovery of Schools From Earthquake Effects," Disasters 11:310-316.
- Hamilton, Brad  
1986 "Mexicans Remember Fateful September Morning," The Mexico City News, September 21:6.

- Herrera, I.  
1986 Catalogo de Sismos de Magnitud Mayor o Igual a 7.0  
Ocurridos en Mexico en el Periodo 1974-1984. Mexico City:  
Instituto Geofisico, Universidad Nacional Autonoma de  
Mexico. (In Spanish)
- Hobeika, Antoine G., Siamak A. Ardekani, and Alerjandro Martinez-Marquez  
1987 A Decision Support System for Emergency Transportation  
Operations Following Major Urban Earthquakes: A Case Study  
of the 1985 Mexico City Earthquake. Virginia Polytechnic  
Institute and State University.
- Kerbo, Harold  
1983 Social Stratification and Inequality. New York: McGraw  
Hill.
- Kreps, Gary  
1980 "Research Needs and Policy Issues on Mass Media Disaster  
Reporting," in Disasters and Mass Media. Washington, DC:  
National Academy of Sciences: 35-74.
- Lammers, C. J.  
1955 Studies in Holland Flood Disaster 1953. Survey of  
Evacuation Problems and Disaster Experiences. Washington,  
DC: Committee on Disaster Studies, National Academy of  
Sciences.
- Ledingham, John and Lynne Massel-Waters  
1984 "Written on the Wind: The Media and Hurricane Alicia,"  
Newspaper Research Journal 6:50-58.
- Levine, Robert  
1986 The Pace of Life in Different Cultures. In Joseph McGrath  
(ed.) The Social Psychology of Time, pp. 39-60. Beverly  
Hills, CA: Sage.
- Lopez, Cervantes, Lopez Carrillo and Escamilla Cejudo  
1986 "Algunas Consecuencias de los Sismos de Septiembre de 1985  
en la Ciudad de Mexico," Salud Publica Mexicana 28:527-536.  
(In Spanish)
- McGrath, Joseph  
1988 The Social Psychology of Time. Beverly Hills, CA:Sage.
- McLuckie, Benjamin  
1977 Italy, Japan, and the United States: Effects of  
Centralization on Disaster Response 1964-1969. Newark, DE:  
Disaster Research Center, University of Delaware.
- Mendez, Luis Lopezllera  
1986 "Assistance for the Mexico City Earthquake Victims,"  
Disasters 10:25-26.

- (no author)  
1986 "The Mexico City Earthquake of September 19, 1985: Lessons for the Bay Area. Special Issue." Networks Earthquake Preparedness News, February:1-16.
- (no author)  
1986 "Mexico City: Rebuilding After the Earthquake," Partners of the America 18:
- Mileti, Dennis, Thomas Drabek and J. E. Haas  
1975 Human Systems in Extreme Environments. Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Montoya, David  
1987 "Responding to Disaster: Canada and the Mexico City Earthquake," Canadian Medical Association Journal 137:68-70.
- Okabe, Keizo and E. L. Quarantelli (eds.)  
forthcoming Mass Media Reporting of Disasters in Japan and the United States.
- Palacios, Agustin, J. Cueli, J. Camacho, R. Cleriga, P. Cueva, J. Yala and L. Cossoff  
1986 "The Traumatic Effect of Mass Communication in the Mexico City Earthquake: Crisis Intervention and Preventive Measures," International Review of Psychoanalysis 13:279-293.
- Pantelic, Jelena  
1988 Housing Reconstruction in Mexico City Abstract. Boulder, Colorado: Natural Hazards Research and Applications Information Center, University of Colorado.
- Perez, Hugo Garcia  
1986 Mexico: The September Earthquake. Unpublished paper.
- Perry, Ronald and Hirotsada Hirose  
1983 "Volcanic Eruptions and Functional Change: Parallels in Japan and the United States," International Journal of Mass Emergencies and Disasters 1:231-253.
- Perry, Ronald and Alvin Mushkatel  
1986 Minority Citizens in Disasters. Athens, Georgia: University of Georgia Press.

- Phillips, Brenda  
1987 "Mass Media Roles in Disaster Threat Situations: Recruitment and Portrayal of the Emergency Untrained Volunteer," International Journal of Mass Emergencies and Disasters.
- Quarantelli, E. L.  
1966 "Organization Under Stress," in Robert Bricton (ed.) Symposium on Emergency Operations. Santa Monica: System Development Corporation:3-19.
- Quarantelli, E. L.  
1978 Disasters: Theory and Research. Beverly Hills, CA.: Sage.
- Quarantelli, E. L.  
1979 "Some Needed Cross-Cultural Studies of Emergency Time Behavior: A First Step," Disasters 3:307-314.
- Quarantelli, E. L.  
1981 "Disaster Planning: Small and Large---Past, Present, and Future," in Proceedings American Red Cross EFO Division Conference. Alexandria, VA.: Eastern Field Office, American Red Cross: 1-26.
- Quarantelli, E. L.  
1983 Delivery of Emergency Medical Services in Disasters: Assumptions and Realities. Newark, DE.: Disaster Research Center, University of Delaware.
- Quarantelli, E. L.  
1984 Inventory of Disaster Field Studies in the Social and Behavioral Sciences 1919-1979. Newark, DE.: Disaster Research Center, University of Delaware.
- Quarantelli, E. L.  
1984 Sheltering and Housing After Major Community Disasters: Case Studies and General Observations. Newark, DE.: Disaster Research Center, University of Delaware.
- Quarantelli, E. L.  
1985 "An Assessment of Conflicting Views on Mental Health: The Consequences of Traumatic Events," in Charles R. Figley (ed.) Trauma and Its Wake: The Treatment of Post-Traumatic Stress Disorder. New York: Brunner Mazel.
- Quarantelli, E. L.  
1986 Research findings on organizational behavior and their applicability in developing countries. Preliminary Paper #107. Newark, DE.: Disaster Research Center, University of Delaware.

- Quarantelli, E. L.  
1987      Needed innovation in the delivery of emergency medical services. Preliminary Paper #120. Newark, DE.: Disaster Research Center, University of Delaware.
- Quarantelli, E. L.  
1987      "What Should We Study? Questions and Suggestions for Researchers About the Concept of Disasters," International Journal of Mass Emergencies and Disasters 5:7-32.
- Quarantelli, E. L.  
1988      "Citizen Groups and Hazardous Waste: Their Careers and Conditions for Emergence," in Hazardous Waste: Detection, Control, Treatment. Amsterdam, The Netherlands: Elsevier. 1757-1764.
- Quarantelli, E. L.  
1988      Future disasters in the United States: More and worse. Preliminary Paper # 125. Newark, DE.: Disaster Research Center, University of Delaware.
- Quarantelli, E. L. and Russell R. Dynes  
1976      "Community Conflicts: Its Absence and Its Presence in Natural Disasters," Mass Emergencies 1:139-152.
- Quarantelli, E. L. and Russell R. Dynes  
1977      "Response to Social Crisis and Disaster," Annual Review of Sociology 2:23-49.
- Ross, Alex  
1978      Organizational Innovation in Disaster Setting. In E. L. Quarantelli (ed.) Disasters: Theory and Research, pp. 215-232. Beverly Hills, CA: Sage.
- Ross, Catherine, John Mirowsky and William Cockerham  
1983      "Social Class, Mexican Culture, and Fatalism: Their Effects on Psychological Distress," Journal of Community Psychology 11:383-399.
- Rossi, Peter H., James Wright, Eleanor Weber-Burdin and Joseph Pereira  
1983      Victims of the Environment: Loss From Natural Hazards in the United States, 1970-1980. New York: Plenum.
- Rossides, D.W.  
1976      The American Class System. Boston: Houghton Mifflin.
- Schorr, John  
1987      "Some Contributions German Katastrophensoziologie Can Make to the Sociology of Disaster," International Journal of Mass Emergencies and Disasters 5:115-135.

- Shibutani, Tamotsu  
1966 Improvised News: A Sociological Theory of News.  
Indianapolis: Bobbs Merrill.
- Stallings, Robert A.  
1978 "The Structural Patterns of Four Types of Organizations in Disasters," in E. L. Quarantelli (ed.) Disasters: Theory and Research. Beverly Hills, CA.: Sage: 87-103.
- Stewart, Abigail  
1986 Psychological Responses to the Mexico City Earthquake.  
Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Tarres, Maria Luisa  
1987 "Crisis and Political Opposition Among the Mexican Classes," International Sociology 2: 131-150.
- Taylor, James D., Louis Zurcher and William Key  
1970 Tornado: A Community Responds to Disaster. Seattle: University of Washington Press.
- Taylor, Verta  
1978 Future Directions for Study. In E. L. Quarantelli (ed.) Disasters: Theory and Research, pp. 251-280. Beverly Hills, CA: Sage.
- No author  
1986 Terremotos-1985 Mexico. Washington, DC: The Panamerican Health Organization. (In Spanish)
- Thier, Herbert, Vivian Gratton and Fred Johnson  
1986 Intentionality and Action: Mexico City Schoolteachers' Perceptions and Expectations Following the 1985 Earthquake.  
Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Turner, Ralph  
1976 "Earthquake Prediction and Public Policy: Distillation From a National Academy of Sciences Report," Mass Emergencies 1:179-202.
- United Nations Economic Commission  
1985 Damage Caused by the Mexican Earthquake and Its Repercussions Upon the Country's Economy. Santiago, Chile: Secretariat of the Economic Commission for Latin America.
- Warheit, George  
1968 The Impact of Major Emergencies on the Functional Integration of Four American Communities. Ph.D dissertation. Columbus, Ohio: Ohio State University.

- Watabe, Makoto  
1986 State of the Art Report on the Damage Features Due to the Mexican Earthquake of September 19, 1985. Tokyo, Japan: (no publisher indicated.)
- Wenger, Dennis  
1978 "Community Response to Disaster: Functional and Structural Alterations," in E. L. Quarantelli (ed.) Disasters: Theory and Research. Beverly Hills, CA.: Sage.
- Wenger, Dennis and E. L. Quarantelli  
forthcoming Mass Media Systems and Community Hazards and Disasters.
- Wenger, Dennis, Thomas James and Charles Faupel  
1985 Disaster Beliefs and Emergency Planning. New York: Irvington.
- Wenger, Dennis, E. L. Quarantelli and Russell R. Dynes  
1986 Disaster Analysis: Emergency Management Offices and Arrangements. Final Report. Newark, DE.: Disaster Research Center, University of Delaware.
- White, Gilbert  
1974 Natural Hazards: Local, National, Global. New York: Oxford.
- Wright, Eirk  
1985 Classes. New York : Schocken.

## Appendici

### Field Instruments Used:

#### 1985 SURVEY ON THE MEXICAN EARTHQUAKE

(Original questions in Spanish; rough English translation provided by the Instituto de Investigacion de la Comunicacion).

On the public image of the President.

1. Before the earthquake, were you more, the same or less confident in President Miguel de la Madrid (MMH) than now?
2. Do you believe MMH has the situation created by the earthquake under control?
3. Do you believe the President is being objectively informed on the city's current situation, or do you believe he is being given nonobjective or distorted information?

On different aspects and consequences of the earthquake.

4. Thinking of the city's current situation, what do you have to say?
5. What rumors have you heard about the earthquake?
6. Of all the people, groups, associations or sectors that have been involved in the events after the earthquake, which of them in your opinion are those who:
  - a. acted more admirably?  
acted less admirably?
  - b. acted more responsibly?  
acted less responsibly?
  - c. whose participation has been more valuable?  
whose participation has been less valuable?
7. How would you rate the actions taken by the following for coping with the situation created by the earthquake:
  - a. DDF (the Mayor's office)
  - b. army
  - c. police

- d. President (MMH)
- e. volunteers

For each ask about how appropriate,  
organized,  
humanitarian,  
well timed were their actions.

8. Focusing on the government, how has it handled the following situations: (on 5 point scale of very well to poorly)

- a. Rescue of survivors?
- b. Inspection of housing damage?
- c. Restoration of services?
- d. Medical aid/care?
- e. Sheltering of homeless?
- f. Feeding of victims?
- g. Order and protection?
- h. Volunteer organizations?
- i. Price control?
- j. Information and direction?
- k. Housing support?
- l. Relocation of public offices and employees?

9. What is your opinion about the information that has been telecast by TELEVISION'S channels? and by IMEVISION'S channels?

On 5 point scale indicate:

- a. Very complete-very incomplete
- b. Very sensational-very realistic
- c. Very directive-very nondirective

10. Would you want to be more fully informed on the consequences of the earthquake, or would you rather hear less about them?

11. Identify the consequences of the earthquake that in your opinion the government should attack immediately.

12. Identify the consequences of the earthquake about which you would like to have more information about.

13. Did the earthquake(s) cause any damage to your house?

- a. No damage
- b. Slight damage (cracks, broken objects)
- c. Considerable damage but the house is liveable
- d. Severe damage making the house uninhabitable
- e. Other

14. Was anyone living in this house injured?

If yes, how many?

What kinds of injuries were suffered?

15. This week, has your house regularly had the service of:

- a. electricity?                      (indicate if this facility does
- b. water?                              not exist in the house)
- c. telephone?

16. Were you informed about the earthquake by the mass media?

a. The day of the earthquake:

How many hours did you hear, read, or watch TV, radio or newspaper?

What radio station(s), TV channel(s) or newspaper(s) did you use?

Which radio station(s), TV channels(s) or newspaper(s) provided the best information?

b. After the day of the earthquake:

What radio station(s), TV channel(s), or newspaper(s) did you use?

Which radio station(s), TV channel(s) or newspaper(s) provided the best information?

17. Have you changed any future plans because of the earthquake?  
If yes, ask for details?

(The interviewer was asked to list all the persons--relatives or not--who lived in the house and obtain the following information).

- a. Names.
- b. Age.
- c. Sex.
- d. Who is the housewife?
- e. Who is the head of the family?
- f. Who was a volunteer helper with respect to the earthquake?
- g. How many day(s) he or she helped?
- h. How many hours worked (average per day)?
- i. What kind of specific help did he or she provide?

## 1986 SURVEY ON THE MEXICAN EARTHQUAKE

(Original questions in Spanish; rough English translation provided by the Instituto de Investigacion de la Comunicacion).

### I. Background data on respondent:\*

Socioeconomic level  
Sex  
Age  
Age category  
Marital status  
Educational category  
Occupation  
Appliances and services available in the home

### II. Questionnaire. (\* means question was included in the 1985 survey)

1. What do you think about the situation brought about by last year's earthquake?
2. Of all the people and organizations that were involved in the events following the earthquake, who performed well, who else?
3. And who acted badly, who else?
4. Do you believe the President is being objectively informed on the work being done to deal with the problems brought about by the earthquake, or is he being given nonobjective or incorrect information?\*
5. Would you want to have more information about the consequences of last year's earthquake, or would you rather not?\*
- If yes, go to Question #6  
If no, why not?
6. What would you like to have more information about?\*
7. In your opinion did the government have the situation under control in the weeks that followed the earthquake?\*
- a) total control  
b) only partly under control  
    what aspects?  
c) no control at all  
d) don't know
8. Does the government have the situation under control now?  
(Same a, b, c, or d)
9. Identify the problems brought about by the earthquake that in your opinion must be solved as soon as possible.\*

10. Besides casualties, victims and collapsed buildings, what others of the city's current problems do you think are the result of the earthquake?

11. Do you think the earthquake worsened some problems the city already had?\*

If yes, what problems?

12. How would you rate the actions taken by the following persons or groups in responding to the earthquake?\*

DDF (The Mayor's Office)

Army

Police

Telefonos de Mexico

The Red Cross

The fire department

The President

The IMSS (Social Security Institute)

Volunteers (people)

The Health Secretariat

The mass media

Foreign aid

13. For each of the above, are they now better organized, the same, or less organized to cope with another natural disaster in the city?

14. Looking at the government, how has it handled each of the following situation caused by last year's earthquake?

(Rate as very well, well, average, poor, very poor)

- a. Inspection of houses for safety
- b. Restoration of telephone service
- c. Providing of shelters for the homeless
- d. Demolishing buildings and clearing debris
- e. Passing of laws to increase the earthquake resistance of buildings
- f. Moving government offices out of the city
- g. Honestly administering the NAFINSA donations account
- h. Improving and embellishing the city
- i. Honestly handling foreign aid
- j. Restoring damaged street
- k. Providing housing for the victims
- l. Publically recognizing heroic acts
- m. Reconstructing hospitals and schools
- n. Informing the public on how things are going
- o. Restoring water service

15. Some aspects of city life are now going to be mentioned. Tell me if you believe the earthquake has anything to do with how they are now.

- a. The economic crisis If yes, increased or decreased it?
- b. Trust in other citizens. If yes, increased or decreased it?
- c. People's desire to live outside of the city. If yes, increased or decreased it?
- d. Security on the streets. If yes, better or worse?
- e. People's confidence in the government. If yes, increased or decreased it?
- f. Love for the city. If yes, increased or decreased it?
- g. The desire to make an extra effort and pull through. If yes, increased or decreased it?

16. Since the first two weeks after the earthquake, have you participated in one way or another in helping with problems brought about by the earthquake?

If yes, doing what?

- a. Donating money
- b. Helping victims
- c. Aiding in reconstruction
- d. Other (what?)

If no, why not?

17. Would you be willing to participate in evacuation drills at your workplace or school?

If no, why not?

18. Who should organize disaster preparations and rehearsals? The government, companies, or someone else?

19. Do you know of a government plan for a disaster?

If yes, what is that plan?

20. Have you heard about the Sistema Nacional de Proteccion Civil?

If yes, do you know what it is?

21. Have you made plans for you and your family in case of another earthquake?

If yes, what kinds of plans?

If no, why not?

22. Should another disaster happen, have you and your family already agreed on going to the safest part of the house?

23. Do you already have a first aid kit?

24. Do you already know what to do with children and/or the

elderly?

25. Do you already have an agreed upon meeting place if you are apart when a disaster occurs?

26. Do you already know emergency numbers you can call if needed?

27. DO you already have such things as batteries, flashlights, pure water, etc.?

28. Do you already know the safest way to evacuate your house?

29. After the earthquake last year, did you consider moving out of the city?

If yes, why did you not move?

30. After the earthquake, did you change your place of work?

31. Did you move out of your house?

32. Did you cancel an already planned trip?

33. In your opinion, has the distribution of new houses for the homeless been just?

- a. It has been just
- b. It has not been just
- c. It has been partly just and partly unjust
- d. Don't know

34. Because of the earthquake, have you had this year problems in your house with:\*

- a. electricity
- b. water
- c. telephone
- d. mail

(Indicate if there is no installation of the service)

For each, what kind of problem?

- a. Interruptions
- b. Billing troubles
- c. Cut offs
- d. Other (what?)

35. Because of the earthquake was anyone living in this house hurt?\*

If yes, how many were hurt or injured?

If yes, what kind of injury was suffered?

36. After the earthquake did you and your family stay in your

house or did you go and live with relatives or friends?

37. To whom did the house where you lived in belong to?

38. Why did you look for shelter there?

39. How long did you live in that house?

40. (For those that did not move elsewhere)

Did some relatives or friends come to live in your house after the earthquake?

41. Why did they come to your house?

42. How long did they live in your house?

43. Please tell me according to this care if you:

- a. Sometime feel tremors
- b. Are concerned about the safety of your relatives and friends
- c. Are nervous to go to a theater or movie house because an earthquake might occur
- d. Get along better with your family than before the earthquake
- e. Watch the lights to see if they are moving
- f. Feel more responsible to help your neighbors
- g. Are nervous to be in a tall building
- h. Are disposed to help other victims of some disaster

44. Finally, would you tell me if live in a:\*

- a. Rented apartment
- b. Rented house
- c. House you own
- d. Condominium you are still paying for
- e. Condominium you own

## ORGANIZATIONAL INTERVIEW GUIDE

(This is an edited version of the 19 page guide that was actually used. To save space, most of the instructions provided, many of the probes suggested, and some of the less important questions that were in the actual guide used in the field have been left out of this edited version).

### Instructions for interviewers:

As was pointed out in the training session, this is NOT an interview schedule but an interview guide. The questions given below need not necessarily be asked exactly the way they are phrased or in the order given. The important point is that the questions indicate the topics regarding which we want to obtain information. It is very important that enough detail be obtained, so the probing procedures discussed in the training session should be carefully followed.

The guide has two parts: Part #1 is to be used with all organizations except the Mayor's office. Part #2 is to be used with the Mayor's office (as well as certain questions from Part #1).

The prime focus is on the coordination of the city's response. We are interested in obtaining information on what each organization did in the trans- and post-impact periods of the earthquake. We are also concerned with getting a picture of the interactions the different organizations had with one another.

A secondary focus is on organizational planning and preparedness for disasters, especially earthquakes. The questions in the last half of both Parts #1 and #2 are designed to obtain such information.

### Part #1

The initial questions in this guide are aimed at obtaining: (a) a time ordered sequence picture of the tasks undertaken by the organization; (b) the perception of the legitimacy, responsibility and authority the organization had of the tasks undertaken; and (c) the degree of perceived conflict and/or coordination in the overall organizational response to the earthquake.

I would like to ask some questions about the response of your organization to the earthquake. Perhaps we can go back to when your organization first heard about the earthquake and go step by step to what was done the first several weeks.

1. When and how did your organization first become aware of the earthquake?
2. At what point did the organization become involved and in

what way?

3. What tasks did your organization undertake?  
(Probe: establish the order in which they occurred, the timing and duration of each of the tasks, what other organizations if any undertook the same tasks, and why did the organization think it had to do these tasks?)
4. What problems developed in trying to accomplish the tasks?
5. You mentioned a number of tasks your organization undertook after the earthquake. Which were the more important ones?  
(Probe: most and least important, relative importance)
6. Let us now turn to a related matter. Would you look at this card (hand to respondent) and tell me if you know which organization did this task during the emergency time period of the disaster. There may be more than one organization involved. For example, which organization was involved in:
  - a. search and rescue activities?
  - b. activating an emergency operations center?
  - c. requesting emergency relevant resources from other groups?
  - d. coordination of search and rescue activities?
  - e. providing emergency medical care?
  - f. setting up security measures (e.g. pass system, roadblocks)?
  - g. making damage assessments?
  - h. opening shelters for victims of the earthquake?
  - i. releasing information to the mass media?
  - j. transporting the injured?
  - k. handling the dead?
  - l. compiling list of missing persons?
  - m. establishing on-site command posts (if there were any)?
  - n. providing food for victims?
  - o. declaring that the emergency period was over?
  - p. restoring essential services?
  - q. coordination of relief supplies for victims?

(Probe if there were any other important emergency time tasks that were carried out that are not the list; if any, what were they, and who did them?)

7. How was the response coordinated?
8. Who coordinated it?
9. Was there any changes in the coordination over time?

Let us now turn to other than local organizations.

10. Was there any involvement of organizations from the federal or national level?

11. What did they do?

12. How did they interact with local organizations or groups?

13. Were there any conflicts between or among the different groups from the local and the national levels?

We want now to look more specifically at the kinds of problems that had to be dealt with by your organization. (Start with the problems or difficulties that the respondent may already have mentioned)

14. Were there any problems of a technical nature?  
(Probe regarding resources, information and expertise)

15. Were there any intra/interorganizational problems or difficulties?  
(Probe regarding coordination, communication, authority, legitimacy, domain and boundaries)

Would you look at this list (hand respondent card). Tell me what you can about these matters as they came up in the disaster response:

- a. damage assessment?
- b. special problems of search and rescue in an urban setting?
- c. decision making given the absence of relevant information?
- d. expectations as to how people would behave?
- e. mobilizing resources?
- f. coordination of public and private groups?
- g. dealing with different levels of governmental authority?
- h. the involvement of international organizations?
- i. the operations of the mass media?
- j. the convergence of information, goods and persons?
- k. integrating volunteers into the response?

16. What are the things you feel that your organization did particularly well?

17. What advice would you give to others who might be faced with the same situation that you had?

18. In looking back at your experience, are there any alternatives to the actions you actually took?

We now want to get away from what your organization did in the earthquake and look at any prior planning for disasters. (if at all possible, lead into by making a link to any previous mentioned of disaster planning or preparedness by the organization).

19. Setting aside what actually happened after the earthquake, what in your estimation was the state of overall disaster planning in Mexico City?  
(Probe how well prepared the community as a whole was, and the respondent's relative assessment of the situation).
20. Generally speaking, was there any overall disaster planning among the emergency organizations in this city?  
(Probe what the planning involved, which organizations participated in the planning, and if any group took the lead).
21. Which local organization, if any, has been the most important in the overall disaster planning in this community?

Let us turn now to the role of the city in the disaster planning.

22. Do you know if the city:
- a. had a written disaster plan?
  - b. conducted rehearsals and exercises of the plan?
  - c. made risk assessments?
  - d. had an emergency operations center?
  - e. made attempts to educate the general public about disasters and planning for them?
  - f. conducted disaster training programs?
  - g. linked up key emergency groups?
  - h. held informal meetings to exchange disaster planning information?
  - i. had mutual aid agreements?
  - j. helped organizations in drawing up their disaster plans?
23. What about your own organization's contact with the city prior to the earthquake? Did you have any contact with respect to disaster planning?  
(Probe nature and frequency of contacts, assessment of whatever assistance was received)
24. Now as to your own organization, prior to the earthquake did it:
- a. have a written disaster plan?  
(If so, obtain copy of the plan)  
(Probe when plan was last updated)
  - b. carry out rehearsals and exercises of the plan?
  - c. special facilities for disaster operations (such as a permanent command post or a mobile van?)
  - d. personnel assigned to planning specifically for disasters?  
(Probe who, what they did)

25. In addition, prior to the earthquake, did you organization:
- do risk assessments?
  - educate the general public about disasters and planning for them?
  - conduct disaster training programs?
  - establish informal links with other emergency groups?
  - have mutual aid agreements?
  - help other organizations draw up their disaster plans?

In concluding, let us talk about the past experiences of your organization with disasters (apart from the last earthquake)

26. What disasters have you experienced?

27. If you had disaster planning at that time, how well did the planning work?

Finally, to conclude:

28. Is there anything you do differently in the future in the case of another disaster?

Thank person for giving the interview.

Obtain whatever disaster relevant documents are available

Indicate that the organization might be contacted again for more information in the future.

## Part #2

This guide is to be used with officials from the Mayor's Office. Its purpose is to obtain information about the internal structure and functions of the office, the social links it has with other disaster relevant organizations, the emergency resources it has available, the kinds of preparedness activities undertaken prior to the earthquake, and what prior disaster experiences the office had.

Internal structure and function:

1. What is the legal jurisdiction of the Mayor's Office?
2. What is the table of organization of the office?  
(see if a copy of the table of organization can be obtained)
3. What is the division of labor in the office?
4. To whom is the office responsible?  
(Probe lines of authority and budget involved)

5. What are the major goals or objectives of the office?

#### Resources

Let us turn to the disaster planning you have.

6. Is there a written disaster plan?  
(Probe if there was one before the earthquake, the time it was last revised, if the plans has ever been rehearsed or exercised, and when)
7. Did other organizations help to develop the plan?
8. What changes, if any, have occurred in the plan over the last five years?
9. Did the earthquake have any effect on disaster planning in the office?
10. What kind of emergency facilities are available to the office?
11. What kind of emergency equipment is available?
12. Is there any stockpiling of emergency resources?

Let us now look at other aspects of disaster planning.

13. Prior to the earthquake did the office :
  - a. do risk assessment?
  - b. attempt to educate the public about disasters and planning for them?
  - c. conduct disaster training programs?
  - d. maintain informal links with other key emergency groups?
  - e. hold formal meetings to exchange disaster planning information?
  - f. have mutual aid agreements with anyone?
  - g. help other organizations draw up their disaster plans?

(Probe for all of the above who had responsibility for the activity, what changes if any occurred as a result of the earthquake, and who was responsible for the change)

14. What kinds of emergencies have occurred in Mexico City in the last five years?
15. What was the involvement of the Mayor's Office in any of them?

TO OBTAIN INFORMATION ABOUT THE RESPONSE OF THE MAYOR'S OFFICE IN THE EARTHQUAKE USE QUESTIONS #1-18 FROM PART #1.