Disaster Study Number 9

# Convergence Behavior in Disasters

## A Problem in Social Control

CHARLES E. FRITZ AND J. H. MATHEWSON

Committee on Disaster Studies

National Academy of Sciences—
National Research Council

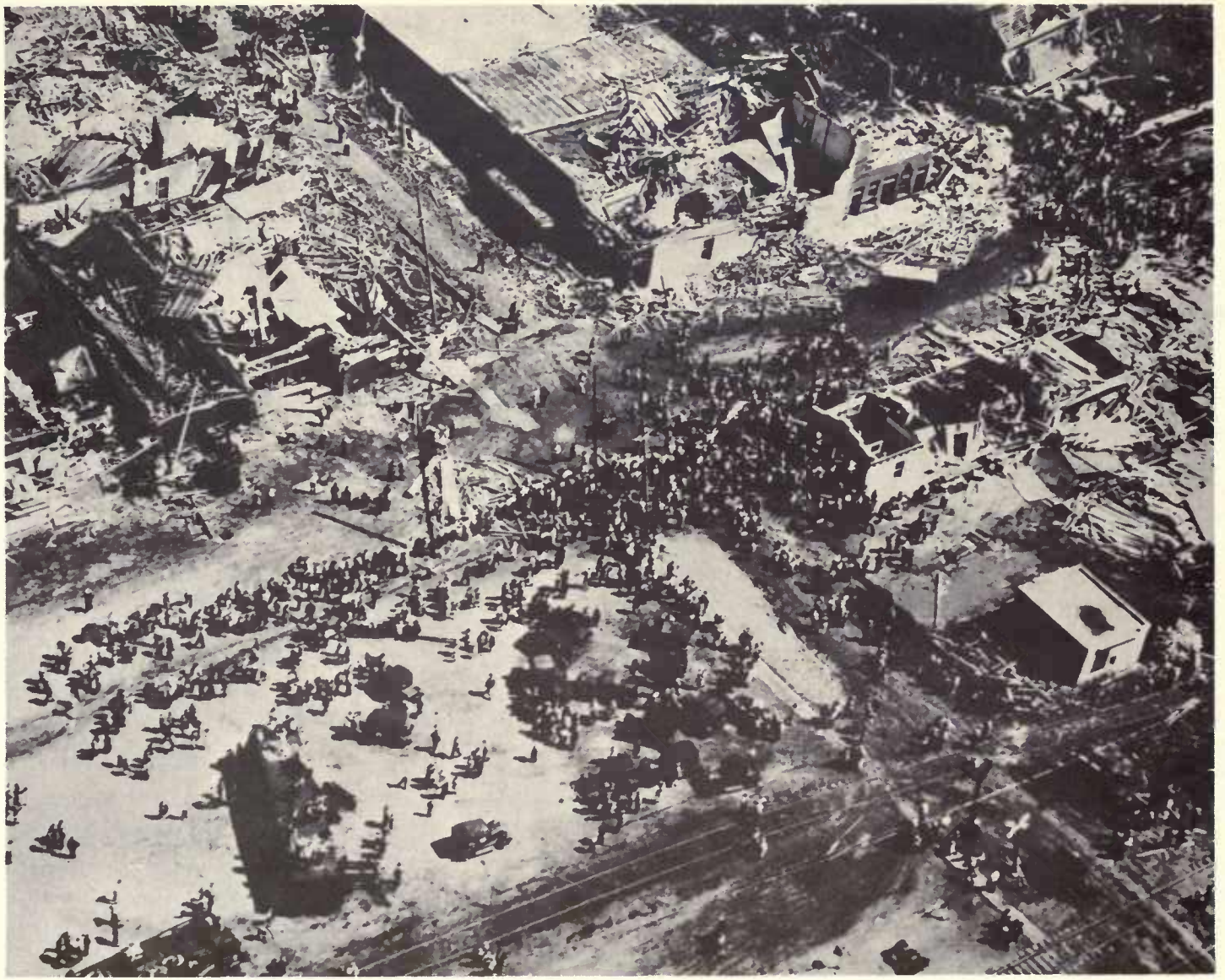
Publication 476

## COMMITTEE ON DISASTER STUDIES

The Committee on Disaster Studies is a committee of the Division of Anthropology and Psychology, National Academy of Sciences—National Research Council. It was established as the result of a request made of the Academy—Research Council by the Surgeons General of the Army, the Navy, and the Air Force, that it "conduct a survey and study in the fields of scientific research and development applicable to problems which might result from disasters caused by enemy action."

The function of the Committee is to aid in developing a field of scientific research on the human aspects of disaster. The Committee maintains a clearinghouse on disaster research, publishes a roster of scientific personnel in the field of disaster research, and issues periodically a Newsletter. It makes modest grants to encourage research in disaster studies, advises with responsible officials on problems of human behavior in disaster, and from time to time issues reports on the results of disaster research.

At present its activities are supported by a grant from the Ford Foundation, and by a special grant from the National Institute of Mental Health of the Department of Health, Education and Welfare.



*Red Cross Photo*

**PLATE 1**

CONVERGENCE BEHAVIOR. Crowds of people converge on the disaster area in the Frost, Texas, tornado of 1930. The informal, spontaneous movement of people, messages, and supplies toward disaster areas and toward particular points within disaster-related zones constitutes a major problem of social control in virtually every disaster.

Disaster Study Number 9
Committee on Disaster Studies
Division of Anthropology and Psychology

# CONVERGENCE BEHAVIOR IN DISASTERS

## A Problem In Social Control

*A Special Report Prepared for the*
*Committee on Disaster Studies*

by

Charles E. Fritz
*Research Associate*
*Committee on Disaster Studies*

and

J. H. Mathewson
*Institute of Transportation and Traffic Engineering*
*University of California*

**Publication 476**
**NATIONAL ACADEMY OF SCIENCES — NATIONAL RESEARCH COUNCIL**
**Washington, D. C.**
**1957**

Library of Congress Catalog
Card No. 57-60019

# PREFACE

This is the third special report within the series of Disaster Study Reports. The special reports are designed to summarize, analyze, and publish the findings of recent disaster research on topics which the Committee believes to have importance and timeliness for both research workers and the many organizations concerned with disaster problems.

A striking aspect of human behavior in disaster is the informal, spontaneous movement of people, messages, and supplies toward the disaster area. This form of movement, which the authors term "convergence behavior," brings needed aid to many victims, but at the same time the resultant congestion makes organization and control of the rescue and relief efforts more difficult.

Convergence behavior is widely recognized as a source of difficult problems in disaster. Some of its effects, such as traffic congestion, have received much attention. All too often, however, it is discussed in terms too general to be very helpful, as, for example, when the people who move toward the disaster site are lumped uncritically into the category of "sightseers."

By placing convergence in a broader context and making more refined and critical distinctions, the authors bring a fresh perspective to the problem. They distinguish and examine the major forms of convergence and the different motivations which impel it, and they discuss the implications of these findings for developing methods and techniques of controlling convergence. Their findings and recommendations impinge upon the concerns of disaster organization planners; national, state, and local governmental officials; representatives of the press, radio, television, and other mass media of communication; transportation and traffic specialists; telephone, telegraph, and other technical communication specialists; police and law enforcement officials; and social and behavioral scientists of several disciplines.



Issuance of this report does not necessarily indicate concurrence in each conclusion or factual statement by members of the Committee on Disaster Studies or by the Committee's sponsoring agencies. We are convinced that this thoughtful and well-documented analysis advances our basic understanding of human behavior in disasters and that it deserves serious study as a basis for a more realistic approach to problems of disaster organization and control.

Carlyle F. Jacobsen
Chairman
Committee on Disaster Studies

## ACKNOWLEDGEMENTS

The authors wish to express their appreciation and gratitude to the following named persons who read and commented on a preliminary draft of this report: Dr. John C. Balloch and Mr. William S. Bennett, Operations Research Office, The Johns Hopkins University; Mr. David Brinkley, National Broadcasting Company; Messrs. D. F. Brennan, Ralph L. Garrett, Leslie L. Kullenberg, Barent F. Landstreet, A. P. Miller, and Lloyd A. Woodward, all of Federal Civil Defense Administration headquarters; Miss Rue Bucher, National Opinion Research Center; Messrs. A. Burg and Slade F. Hulbert, Institute of Transportation and Traffic Engineering, University of California; Sir Ernest Rock Carling, Civil Defence consultant adviser to the British Home Office and to the Ministries of Health and Supply, London; Dr. James C. Diggory, The Psychological Laboratory and Clinic, University of Pennsylvania; Mr. Robert C. Edson, The American National Red Cross; Drs. Norman E. Green, Maurice T. Price, and E. F. Schietinger, Air Force Personnel and Training Research Center (U.S. Air Force); Dr. Sj. Groenman, Instituut voor Sociaal Onderzoek van het Nederlandse Volk, Amsterdam; Dr. John L. Kennedy, The Rand Corporation; Dr. Dorothy L. Keur, Hunter College; Dr. Lewis M. Killian, The Florida State University; Dr. Donald N. Michael, Dunlap Associates, Inc.; Dr. John Walker Powell, Fund for Adult Education; Mr. E. L. Quarantelli, Indiana University; Mr. Leonard Schatzman, Coe College; Dr. Anthony F. C. Wallace, Eastern Pennsylvania Psychiatric Institute; and Dr. Michael Young, Institute of Community Studies, London.

Many of the commentators not only gave helpful criticisms of the manuscript, but also suggested additional ideas which have been incorporated in the text or in footnote references. None of them, of course, are in any way responsible for the deficiencies which remain, and this acknowledgement of their aid does not necessarily imply agreement with the conclusions reached in the report.

Grateful acknowledgement is made to the following named publishers for permission to quote from their publications: The Controller of Her Britannic Majesty's Stationery Office, for quotations from Richard M. Titmuss, Problems of Social Policy (London, 1950); McGraw-Hill Book Company, Inc., and The Rand Corporation, for quotations from Irving L. Janis, Air War and Emotional Stress (New York, 1951); and the University of Chicago Press for quotations from the article by Leo Grebler, "Continuity in the Re-Building of Bombed Cities in Western Europe," American Journal of Sociology, LXI, No. 5 (March 1956), 463-469.

We wish to express our appreciation to the American National Red Cross for furnishing the photographs used in this report and for giving us permission to reproduce them.

C. E. F.

J. H. M.

February, 1957

TABLE OF CONTENTS

## LIST OF ILLUSTRATIONS

# INTRODUCTION

A virtually universal phenomenon following disasters is the mass movement of people, messages, and supplies toward the disaster-struck area. This "convergence action" has been documented and verified in nearly every study of disaster. In its most obvious and concrete manifestation -- an increase in traffic and in the number of "outsiders," "sightseers" or "unauthorized personnel" -- it is well-known to control and relief officials who have operated in actual disaster. In almost every disaster, both these officials and competent observers emphasize that "convergence behavior" greatly magnifies and complicates control efforts, and substantially retards organized relief efforts.

Despite the frequency with which convergence behavior has been noted, the broad scope and significance of the problem are rarely appreciated. The problem apparently is not receiving adequate attention in current disaster control planning and operations. Moreover, although current disaster literature contains references to many facets of the problem, these references are scattered and unsystematized.

The purpose of this report is to analyze the findings of current disaster research bearing on convergence behavior within a framework that is somewhat broader than that in which it is ordinarily viewed. We shall be concerned with the magnitude of the problem; the major forms that convergence behavior takes; the various types of convergers and their motivations; and the techniques which have been used, successfully or unsuccessfully, to deal with the problem. We shall also point to findings which have significance for further research and planning efforts.

# CHAPTER I

## THE NATURE OF CONVERGENCE

The ramifications of convergence are frequently overlooked in discussions of disaster. This failure to recognize the significance of convergence may stem, in part, from the popular preoccupation with "divergence" behavior. The popular image of "disaster" brings to mind a picture of a highly fearful or "panicky" mass of survivors fleeing from the scene of destruction. Police and other control authorities who have never had experience in a major disaster often share this popular conception in believing that their major problems will occur in handling or restraining the "panicky" or "hysterical" behavior of the disaster-struck population itself. These persons are frequently surprised to find that the disaster survivors are much more passive, cooperative, and subject to control than the persons who begin to converge from outside the disaster-struck area immediately following the disaster. As a large number of recent disaster studies have shown, the disaster-struck survivors themselves rarely constitute a control problem. On the contrary, the major problem of control, and the major hindrance to organized relief efforts, usually arises from the convergence of thousands of anxiety-motivated, help-motivated, curiosity-motivated, and, occasionally, gain-motivated persons who enter the disaster-struck area from the outside, and thereby create overloads on transportation and communication facilities.

The problem of convergence is often subsumed under the headings of "traffic" and "sightseers." This is understandable in view of the fact that the increases in traffic and in the number of "outsiders" or "strangers" are readily observable phenomena following a disaster. These two terms, however, are an over-simplified description of a very complex set of phenomena. The motivations for convergence are quite varied. Correspondingly, the solutions to the problem cannot be unitary solutions, but require recognition of the different needs and motives of the "convergers." In the following sections, we shall introduce some distinctions which we feel are useful and necessary in any fundamental discussion of the topic.

### The Forms of Convergence

We shall use the term "convergence" in its usual sense to denote movement or inclination and approach toward a particular point. Specifically, the term will be used to express the notion of movement toward the disaster-struck area from the outside--external convergence--and movement toward specific points within a given disaster-related area or zone--internal convergence.

It is possible to distinguish three major forms of convergence:

1. Personal Convergence: The actual physical movement of persons on foot, by auto or other vehicle.

2. Informational Convergence: The movement or transmission of messages.

3. Materiel convergence: The physical movement of supplies and equipment.

It should be noted that we are limiting our discussion to the informal, unofficial, or unauthorized forms of convergence. For present purposes, we shall assume the need for convergence by agencies and personnel that have official disaster responsibilities. We are concerned primarily with the potential impediments to official convergence and the efficient administration of a relief and rehabilitation program. The informal types of convergence are likely to pose problems which are unanticipated or unevaluated in current planning. [1]

---

1. This does not mean, of course, that all official convergence is actually necessary convergence or that the same critical attention should not be devoted to the officially authorized forms of convergence. Disaster areas are frequently visited by officials in far greater numbers than are actually needed for reconnaissance; supplies or equipment needed for a later phase of the disaster are shipped into the area during the emergency period; relief centers or supply distribution points are sometimes established in areas where they cannot efficiently serve the population for which they are designed; and the volume of official communications and operational messages flowing into disaster areas probably could be reduced by more efficient coordination and screening.

Official disaster agencies and authorities may make a significant contribution to the reduction of unnecessary convergence by more efficient use and coordination of their own personnel, resources, and communication facilities. For observations pertinent to this topic, see Irving Rosow, Authority in Natural Disaster (Committee on Disaster Studies Disaster Study /Washington, D. C.: National Academy of Sciences-National Research Council, to be published/); Douglas Courtney, John Balloch, Harvey Ludwig, and Elizabeth Bowman, "Operation Tulip: A Study of Military Assistance in the Netherlands Flood Disaster" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, June 21, 1954); and William H. Form, Sigmund Nosow, Gregory P. Stone and Charles M. Westie, "Final Report on the Flint-Beecher Tornado" (Unpublished report, Social Research Service, Continuing Education Service, Michigan State College, 1954).

## The Spatial Pattern of Convergence

In visualizing the process of convergence in disasters (see Plate 2), it is appropriate to think of a series of superimposed circles of ever-widening diameters. Cutting through these circles are radii extending from the outer circumference to the center. These radii may be viewed as roads, railways, airlines, and communication lines or channels leading toward the disaster area. In actuality, of course, none of these may move in a direct linear fashion; the radii are used here to indicate the direction of movement, not the actual course of movement.

The center circle will be designated the "disaster area," the circle immediately surrounding it, the "contiguous zone," the third circle, the "proximate zone," and the final circle, the "remote zone."[2] The contiguous zone should be thought of as a narrow band or strip immediately surrounding the site of destruction and casualties. The proximate zone includes the surrounding communities or satellite communities in the general environs of the disaster-struck community or area. The contiguous zone and the proximate zone together comprise the areas which are most likely to learn of the disaster immediately and from which the earliest outside response and assistance are likely to come. They are also the zones to which survivors go or are taken for immediate medical treatment, emergency relief, and shelter.

The remote zone is highly variable in size and, in any moderately large disaster, will range, say, from communities 100 or so miles away to encompass parts of the entire nation or world. In a tornado-struck, Arkansas community of about 1,100 people, for example, the National Opinion Research Center found that the convergers came from many states in the Union and from several foreign countries.[3]

---

2. Wallace has developed a similar concentric model of the spatial zones in disaster, based on the functional characteristics of each zone. His four major areas--(1) impact area; (2) filter area; (3) organized community aid area; and (4) organized regional aid area--roughly correspond with the zonal distinctions used in this report. Cf. Anthony F. C. Wallace, Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation (Committee on Disaster Studies, Report No. 3 / Washington, D. C.: National Academy of Sciences-National Research Council, Publication 392, 1956/), 3-6.

3. Eli S. Marks, Charles E. Fritz, et al., "Human Reactions in Disaster Situations" (Unpublished report, National Opinion Research Center, University of Chicago, June 1954), I, 237-241. (This report is available to qualified Armed Services Technical Information Agency users as ASTIA document No. AD-107 594.)

Within each of these zones, there are additional circles of internal convergence, as persons from various parts of the zone or from other areas converge on particular points or centers within the zone. In the disaster area, this internal convergence initially takes the form of foot movement by the survivors searching for persons who are missing, sources of information and assistance, and points of egress from the area. The convergence rings within the contiguous and proximate zones may be comprised of personal, informational, and materiel convergence on communication, first aid, hospital, and relief centers in these areas. The internal convergence in the remote zone is primarily informational and materiel. Residents in remote communities telephone local newspapers, radio, and television stations for further information; get into communication with local Civil Defense and Red Cross headquarters or telegraph offices in order to make inquiries and send messages; or send clothing and other supplies to central collection centers or transportation terminals for delivery to the disaster area. This internal informational and materiel convergence may be converted into personal convergence on the disaster area if the emotional needs for obtaining information and rendering assistance are not satisfied.

# A SPATIAL MODEL OF CONVERGENCE BEHAVIOR

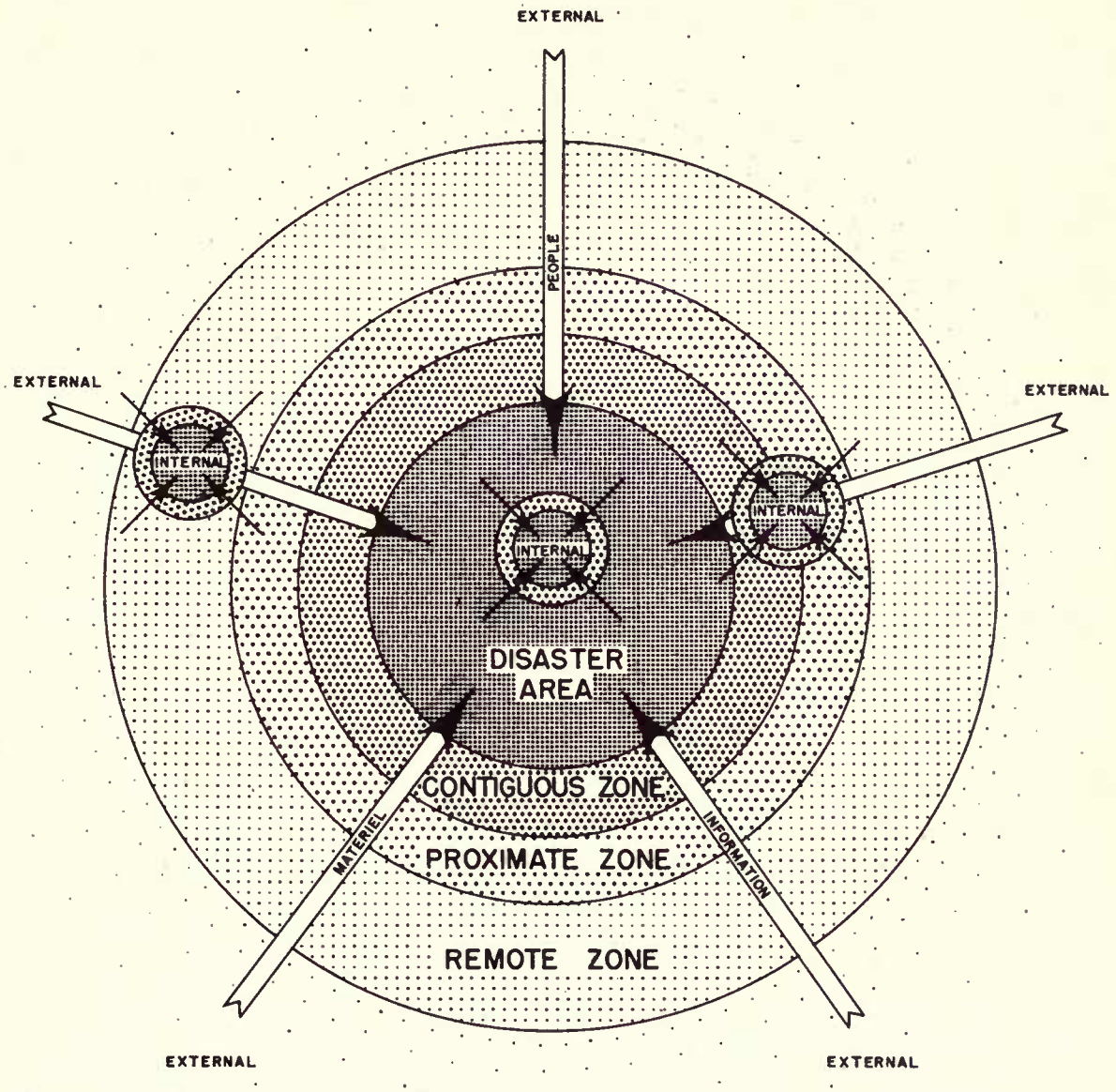



PLATE 2

## CHAPTER II

## THE SCOPE OF THE PROBLEM

Some form of convergence, both internal and external, has been documented in every recent disaster study. We turn now to an examination of disaster research materials for a more concrete picture of the magnitude and scope of the three major forms of convergence--personal, informational, and materiel. [1]

### Personal Convergence

Precise quantitative data on the extent of personal convergence are generally absent in the various disaster reports, primarily because convergence phenomena have rarely been primary objects of study. In all recent disaster studies, they have been treated either casually or as a corollary to other principal features under study. Nevertheless, current data are sufficient to indicate that the actual physical movement of persons in and toward the disaster area and toward specific points in contiguous and proximate zones has provided the most direct, immediate, and persistent problem of control in nearly every recent disaster.

The following case materials, drawn from various disaster reports, will serve to illustrate the breadth and complexity of the problem.

a. The White County, Arkansas, tornado, March 21, 1952:

> Virtually all the control authorities agreed that the control of traffic and the movement of population posed the worst problem with which they had to deal; and persons who were engaged in various rescue, medical, and relief activities often reported that the convergence action by outsiders frequently hindered the performance of their functions. Within about an hour after the tornado struck White County, hundreds of autos began moving along Highway 67 and into the disaster-struck communities. . . . This flow of traffic continued for over one

---

1. Although it is useful to separate these three forms for analytic purposes, it should be noted that they are not mutually exclusive categories. Some persons may engage in only one of the forms of convergence, but others may participate in all three forms of convergence simultaneously or at different time phases following the disaster.

week. On Sunday, two days after the tornado, an estimated 1700 cars an hour took to the highway leading into the Judsonia-Bald Knob area, and, according to one of the top Patrol officials, by 10:00 A. M. Sunday morning cars were lined bumper to bumper for 10 miles on either side of Judsonia. Eighty percent of the total personnel of the State Patrol was used in an attempt to unsnarl the massive traffic jam. Emergency vehicles were frequently completely blocked from entrance or exit to the area. The initial external convergence came from immediately surrounding areas and communities. A second wave began later in the evening with persons from more distant parts of Arkansas and surrounding states. Beginning the morning following the tornado, a third wave of outsiders began converging from more distant states.[2]

b. The Waco, Texas, tornado, May 11, 1953:

Traffic in the downtown area was immediately jammed. Persons attempting to enter the area found their progress blocked by debris; and survivors with cars which could be operated tried desperately to leave. Police began efforts to control traffic flow, but were unable to do so until a sufficient force of uniformed men had been recruited to man each street intersection in the area of heavy downtown damage. In fact, traffic management was one of the most difficult problems faced by the authorities for several days. The chief of police later asserted that traffic control and maintenance of communications were the two things of most importance in the disaster situation.

The most serious traffic problem after control had been established came on the Sunday following the disaster, when it seemed that most of Texas arrived as sightseers. Bumper-to-bumper for blocks, the cars attempted to get into the restricted area. Radio stations broadcast appeals through the day for persons to stay away from Waco but with no success. "It was worse than a football crowd," a tired police officer was reported as saying. "Airplanes buzzed over the ruins like buzzards, creating a sky-traffic jam." Many spectators did break through the cordon. The Chief of Police estimated some 10,000 persons standing idly near the intersection of Fifth and Austin Streets (the point of greatest loss of life) where they all but stopped work in progress since trucks were forced to "bull" their way through the crowds at a snail's pace.[3]

---

2. Eli S. Marks, Charles E. Fritz, et al., "Human Reactions in Disaster Situations" (Unpublished report, National Opinion Research Center, University of Chicago, June 1954), I, 237-240.

3. Harry E. Moore and Fred R. Crawford, "Waco-San Angelo Disaster Study: First Annual Report, 1 July 1953 - 1 July 1954" (Unpublished report, Department of Sociology, University of Texas, 1954), sec., "Cities in Crisis," 3-4, 8-9.

*Photo Courtesy "The Atlanta Journal"*

**PLATE 3**

PERSONAL CONVERGENCE. Thousands of people crowd into the disaster-stricken area in Gainesville, Georgia, following the tornado of April, 1936. Note the rope cordon erected by National Guardsmen in an attempt to control the crowds.

c. The West Frankfort, Illinois, mine explosion, December 21, 1951:

According to the police chief, the only major problem that arose in connection with the relief effort was the thousands of cars which drove into the city from out of town. An estimated 1,000 cars an hour began coming into the community on Saturday following the disaster. Many of the people who came from out of town were miners, who were volunteering their services, and relatives and friends of the miners. The majority, however, were probably curiosity seekers.[4]

d. The Warner Robins, Georgia, tornado, April 30, 1953:

During the first 24 hours after impact, and especially during the first 12 hours, there were other problems which were not completely solved. One problem was that of traffic. The traffic problem can be traced to two sources, but which contributed the most is uncertain. Traffic in the city of Warner Robins and on approach roads could, understandably, be tied up because of debris blocking the main thoroughfares. The other reason, and one given as "the reason" by most respondents, was the great number of "sightseers." Before road blocks could be established around the devastated area and on roads leading to the town, these areas were clogged with cars. The Superintendent of the Macon Hospital (located about 18 miles from Warner Robins) reported that ambulances were delayed in getting the first patients to the hospital because of the heavy traffic between Macon and Warner Robins. The traffic was brought under control later, but for perhaps two hours congestion was great enough to interfere with essential operations.[5]

e. A chemical plant explosion and fire, Kanawha Valley, Charleston, West Virginia, Summer, 1951:

Despite a terrific downpour of rain, the public so responded to their reactions that within a matter of five minutes, traffic problems began to mount. Within ten minutes, every road leading to the plant was so congested and snarled with automobiles that the nearest point that vehicular traffic could approach the scene of the emergency was

---

4. Marks, Fritz, et al., op. cit., III, Appendix B-3, 64.
5. Lewis M. Killian and Jeannette F. Rayner, "Assessment of Disaster Operations Following the Warner Robins Tornado" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, August 20, 1953), 10, 16.

still three to four miles distant. As a result, trained fire squad members and other needed personnel were forced to walk to the scene before they could begin their efforts to aid the plant fire squad members, who were on duty at the time of the disaster. The delivery of much needed fire fighting supplies and materials was delayed for a considerable period of time, which hampered the all out attack on the blaze so as to bring it under control.[6]

f. The Texas City, Texas, munitions ship explosions, April 16, 1947:

/During the period of immediate reaction/ outside help began to arrive in Texas City. Hundreds of vehicles, including private passenger cars, ambulances, firetrucks, and heavy construction equipment, converged on the city along three crowded access roads. A new problem arose immediately--the problem of traffic congestion and control. Surprisingly, none of the informants who came into Texas City from the outside during this period reported that evacuees impeded incoming traffic. This may be ascribed to two things, the fact that there was not a mass flight from Texas City immediately after the blast and the fact that many of the people who did flee at this time were on foot. During the first few minutes, vehicles moving towards Texas City were able to travel at high speed, but as every minute passed the volume of traffic converging on the city increased and the roads did become jammed. Within 45 minutes to an hour's time, incoming cars were met by ambulances and private vehicles evacuating the injured, and the traffic problem became acute. At least part of this congestion was unnecessary. Many of the cars approaching the city contained anxious relatives or even mere curiosity-seekers and they, of course, impeded the movement of doctors, ambulances, fire trucks, and wrecking equipment. Within Texas City itself there was an equally serious problem, for the small city was jammed with vehicles speeding in all directions. Many of the drivers did not know where to go to be useful, and the roads into the waterfront area were littered with debris. Thus, both external and internal traffic controls were needed.[7]

---

6. G. J. Ratcliffe, "Cooperating with Your Neighbors in Disaster Plans" (Paper presented at the National Safety Congress, Chicago, Illinois, October 21, 1954).

7. Leonard Logan, Lewis M. Killian, and Wyatt Marrs, A Study of the Effect of Catastrophe on Social Disorganization ("Technical Memorandum," No. ORO-T-194 /Chevy Chase, Maryland: Operations Research Office, July 22, 1952/), 40-41.

g. The Holland flood, February, 1953:

> During the first days after the disaster, all of Holland felt great unity. On the roads, in streetcars, trains, everywhere, the subject of conversation was the disaster. Strangers spoke to each other and exchanged information. Emotions were not merely expressed by speech-reactions, but also by deeds. Everyone was prepared for action. . . . Volunteers began arriving in the stricken area Sunday afternoon from all over the country. Student organizations rented buses to bring their members to the area. All Dutch universities were closed the first week so that students could go and help. In fact, the stream of people to the disaster area was so great that already on the day of the disaster itself, the press and radio had to request people urgently not to go anymore, as there were enough volunteers and there was danger of overcrowding the roads. [8]

h. The Brighton, New York, series of house explosions and fires, September 21, 1951:

> The men who were away working in Rochester appeared to have found out about the disaster in many different ways. Typically, the first report heard was very vague and grossly exaggerated. Many of the men attempted to reach their families by telephone but most could not get through because of the volume of calls or because no one answered at the house they called. Failing to get through by phone, many of these men began to drive back to Brighton. Others did not even attempt to phone but immediately upon hearing the first disaster report, started for their homes. Some returned to the area while the explosions were still occurring. In at least one case, a man who returned was responsible for turning off all the gas valves in his particular block. Most, however, found themselves tied up in the traffic jam which quickly ensued, as they, disaster and relief units from Rochester, and mere curiosity seekers all converged on the normally heavy traffic road that leads into the center of Brighton. In many cases, even when the men eventually reached the edge of Brighton, road blocks had been thrown up and they were not allowed to enter the town. . . . Despite all this, a number of men took to the back roads and were able to work their way into the disaster area. [9]

---

8. Instituut voor Sociaal Onderzoek van het Nederlandse Volk (ISONEVO), Studies in Holland Flood Disaster 1953 (Washington, D. C.: National Academy of Sciences-National Research Council, Committee on Disaster Studies, 1955), IV, 18-19.

9. Marks, Fritz, et al., op. cit., III, Appendix B-2, 37.

i. The Worcester, Massachusetts, tornado, June 9, 1953:

The traffic jam in the filter area was, by 5:30 /approximately 20 minutes after impact/, formidable, and was interfering with the passage of fire, police, and public works vehicles, and ambulances. Regular police were occupied with rescue and evacuation procedures, but according to several reports, "spontaneous volunteers" took over the job of directing traffic in and around the impact area. These "spontaneous volunteers" may actually have been auxiliary CD police. Complicating traffic problems, of course, were the hundreds of fathers, mothers, sons, and daughters of residents of the impact area, abandoning their cars in the filter area and running into the impact area on foot to find and help their families.[10]

j. The atomic bombing of Hiroshima, Japan, August 6, 1945:

Within twenty-four hours after the mass flight from Hiroshima, thousands of refugees came streaming back into the destroyed city. According to one of the USSBS reports, road blocks had to be set up along all routes leading into the city because there were so many people who wanted to search for missing relatives or to inspect the damage. . . . From what happened at Hiroshima, it is apparent that special problems of disaster control are likely to arise in connection with keeping unauthorized persons out of stricken or contaminated areas (unless avoidance tendencies have been built up by public information about the dangers of radioactivity). Apparently there were strong "approach" motives among the survivors: to search for the missing, to salvage possessions, or to satisfy curiosity.[11]

k. World War II air attacks on British cities:

One form of behavior consistently noted among the British was a high degree of curiosity about what happens during air attacks, focusing especially on the damage produced. On the day after a night raid, groups of "curious-minded" people were observed making extensive tours of damaged areas. At times the police were obliged to issue

---

10. Anthony F. C. Wallace, Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation (Committee on Disaster Studies, Report No. 3 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 392, 1956/), 74.

11. Irving L. Janis, Air War and Emotional Stress (New York: McGraw Hill Book Co., 1951), 49-50.

appeals to the public to desist from "sightseeing" because they interfered with rescue work and created traffic problems. Similar forms of curiosity have been noted following air raids in Spain and in other countries.[12]

It is appropriate to think of the disaster area itself as the central gravitational field for convergence. The initial personal convergence is oriented almost exclusively toward the disaster area or toward specific points within the area. This area tends to remain a major focal point of attention and interest until the restoration process is well under way--a period that may last for days, weeks, or months, depending upon the scope of the disaster. In the meanwhile, the evacuation of the injured, the dead, and the homeless, and the establishment of information, communication, and relief centers in contiguous and proximate zones create satellite rings of internal convergence in outside areas. Persons begin converging on hospitals, morgues, newspaper offices, radio stations, government offices, control and relief centers, and other sources of information, assistance, and activity. Convergence thus begins to impinge on areas, organizations, and facilities spatially removed from the disaster site.

The speed and fluidity of this convergence outside the disaster area is often unanticipated. While the authorities and law enforcement agencies are attempting to establish control in and around the disaster area, agencies and facilities outside the area are frequently overrun with convergers before they have had time to organize their resources and personnel. The impact on hospitals and medical centers is especially acute. The following quotation from a medical study of the Worcester, Massachusetts, tornado provides a graphic illustration of the kind of internal convergence problems that are repeatedly observed in recent domestic disasters:

> Lack of central organization was evident in the lack of control over transportation and traffic. No road blocks were established until after practically all casualties had been evacuated; the road blocks finally set up were arranged primarily to protect property. Evacuation of the injured was accomplished by means of the nearest available vehicles. The drivers were obsessed with the notion that great speed made for greater likelihood of recovery. Few casualties were reported in shock at the time they were placed in vehicles, whereas many were in shock upon arrival at a hospital. Coordination and control of vehicular flow during the period of evacuation was minimal both in the disaster area

---

12. Ibid., 154-155. An interesting account of convergence problems in an East Indian disaster may be found in The Quetta Earthquake: 1935 (Simla: Government of India Press, 1935).

and in the main arterial streets between the stricken areas and the hospitals. Similarly, inadequate control of traffic was evident in the hospital unloading zones.

Chaotic congestion of traffic was produced at every hospital by the volume of vehicles seeking to enter and leave. Hospitals #7 and #4 were the most seriously handicapped by the traffic situation.

Hospital #7, the nearest to one of the most seriously damaged areas in Worcester, was overrun with vehicles and patients early in the course of the evening. At least four separate entrances into this hospital were utilized for unloading, and traffic congestion around the hospital area was so great that many drivers seeking to discharge casualties recognized that the delay would be great and so went on to other hospitals. . . . Many ambulatory casualties could not gain entrance into Hospital #7 and were forced to walk down the street to Hospital #1 nearby.

Hospital #4 is the nearest hospital to one of the damaged suburban towns, and injured people from this town are usually driven down a main road into Worcester and delivered at Hospital #4. This route was utilized on the night of the tornado. Therefore, Hospital #4 received most of the casualties from this town, as well as many from Worcester itself. At Hospital #4 the main entrance is wide enough to accommodate only one car at a time. This entrance quickly proved to be a bottleneck, and it was necessary to station official and volunteer policemen to control traffic. A second bottleneck was soon in evidence at the ambulance entrance because the ambulances and private vehicles, after discharging casualties, had to turn around in a blind end and return by the same route along which they had entered, thus bucking the oncoming traffic.

All the hospitals were thronged with people most of whom came for one of three reasons: to find missing relatives, to give blood, or to offer help in some way. A few people seemed to come out of curiosity. Although the emotional pitch of the crowds was high, they were cooperative; and the general disorder was a result of the lack of any effective organization to control them. The people swarming through the rooms and corridors hampered the work of caring for the injured by the mere fact of their physical presence, not because of any lack of earnest desire to be helpful. No hospital had any central agency to which volunteers could report for assignment, and volunteers who possessed special skills were in many instances unable to be of real help amid the confusion.[13]

---

13. See next page.

## Informational Convergence

Coincident with the actual physical movement of people toward the disaster area and toward the various information and relief points in contiguous and proximate zones, there is an informational convergence on communication centers, in the form of inquiries, offers of assistance, and other messages. Virtually every disaster account makes reference to the "jamming," "swamping," or "overloading" of existing communication facilities and informational centers. Such descriptions, of course, are of little value in indicating the actual quantity of informational convergence, but they serve to establish that communicational convergence, like personal convergence, is a persistent problem of disaster control.[14]

---

13. Henry J. Bakst, Robert L. Berg, Fred D. Foster, and John W. Raker, "The Worcester County Tornado: A Medical Study of the Disaster" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, January 17, 1955, /Limited Distribution/), 18-19. For further examples and discussions of techniques for handling convergence problems in hospitals, see John W. Raker, Anthony F. C. Wallace, Jeannette F. Rayner, and Anthony W. Eckert, Emergency Medical Care in Disasters: A Summary of Recorded Experience (Committee on Disaster Studies, Report No. 6 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 457, 1956/); Nathaniel W. Faxon, "The Problems of the Hospital Administration," in Management of the Cocoanut Grove Burns at the Massachusetts General Hospital (Philadelphia: J. B. Lippincott Co., 1943), 3-8; J. L. H. Paterson, "Letters from Shanghai: A Hospital in the Civilian War Zone," Lancet, CCXXXIII (September 18, 1937), 709-710; and J. L. H. Paterson, "More Letters from Shanghai," ibid., (October 2, 1937), 819-828.

14. Theoretically, a communications system may be said to be overloaded when more message units than it has the capacity to handle expeditiously are introduced into the system. Or, more specifically, a system will be overloaded when any increase in the rate in which messages are received results either in (a) a decrease in the rate and/or quantity of messages, or (b) no increase in the rate and/or quantity of messages that are acted upon and moved through the system. Present findings on the magnitude of informational convergence are often obscured by the failure to determine the capacities of the system and the number of message units introduced into the system over and above its normal operating load.

There obviously are a number of inherent difficulties in obtaining accurate data on this problem in disasters: (1) It is difficult to establish a "normal" capacity for systems which have been partially destroyed or which have lost some of their operating personnel. (2) Personnel located at telephone switchboards, telegraph offices, radio stations, etc., normally keep some form of

In restricted or localized disasters, where the communication facilities remain essentially intact, the telephone system experiences a rapid increase in the volume of calls following a disaster.

a. Plant explosion in St. Paul, Minnesota, February 8, 1951:

> The telephone provided one of the early sources of information to the residents of the community. The telephone exchanges in St. Paul were reported to have carried their greatest peak load in history following the explosion. The most seriously affected exchanges were those in the immediate vicinity of the plant. Despite radio appeals asking patrons to limit calls through all St. Paul exchanges, persons continued trying to call the mining plant to see if relatives were safe.[15]

b. Brighton, New York, house explosions and fires, September 21, 1951:

> Getting in contact with all immediate family members was . . . one of the first actions on the part of people who left the /disaster/ area. Generally the women phoned their husbands to tell them about the disaster and inform them where they had gone and could be found. For mothers with children in the school, another primary concern was getting in touch with the school to let the child know where they were and to ascertain what was being done with the children. People experienced considerable difficulty in getting calls through as everyone tried to phone at the same time. The Brighton exchange reported a

---

tally or record of incoming and outgoing messages, but under the stress of disasters the record-keeping tasks are often neglected because they are viewed as non-essential. (3) People interested in recording the total number of messages or calls handled have no way of knowing the number of attempted communications that are rejected because the channels have been disrupted or are already in use. (4) Message centers with automatic tallying devices, such as dial telephone systems, may provide accurate totals for incoming and outgoing message units, but they provide only an inferential basis for distinguishing disaster-related from non-disaster-related messages (i.e., the number or percentage increase over comparable normal time periods). (5) Finally, and most importantly, a very large volume of informational convergence occurs outside the official or formally-established channels in the form of word-of-mouth communication; hence, it is not subject to scrutiny or measurement by resort to the records of well-established communication centers.

15. Marks, Fritz, et al., op. cit., III, Appendix B-6, 111.

record 180,000 calls for the day. The most numerous were between 1:45 P.M. and 3:45 P.M. /during and immediately following the emergency period/.[16]

c. Explosion of a fireworks plant warehouse, Houston, Texas, June 5, 1953:

Out of a total sample of 139 interviews, it was found that over 14 per cent of the persons interviewed first learned of the explosion by receiving or initiating a telephone call. (Over 46 per cent learned of the event through face-to-face verbal communication.)

> In all, eighteen people from the sample made telephone calls within the first fifteen minutes after the explosion. The reasons for these calls were analyzed. It was found that seven people called because they had relatives or property in the disaster area and were concerned about them. One man who was near the scene called his family to tell them he was uninjured. It is questionable whether the reasons that the other ten made their calls, so soon after the explosion, can be justified in the light of the tremendous load of necessary traffic that strikes public communication systems during a disaster. For instance, six people who were closer to the point of the explosion than were their homes and families, nevertheless called home to find out if their families were all right. Curiosity as to what had happened was the only motive three people could cite, and one woman called her employer's insurance company to tell them that a plate glass window in the store had been broken![17]

It should be noted that the capacities of telephone or other communication systems frequently can be overloaded when only a small percentage of the total population attempts to use the system simultaneously. This is especially true in large urban centers. For example, the Survey Research Center, in a sample survey of public reactions to a surprise Civil Defense alert in Oakland, California, found that only one per cent of the population reported using the telephone to check on the warning during or immediately following the alert. Translated into numerical terms, however, this could

---

16. Ibid., Appendix B-2, 36.

17. Lewis M. Killian, Randolph Quick, and Frank Stockwell, A Study of Response to the Houston, Texas, Fireworks Explosion (Committee on Disaster Studies, Report No. 2 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 391, 1956/), 16.

represent an increment of 10,000 phone calls added to the normal line load.[18]

When the technical facilities of communication are rendered completely inoperable or substantially damaged, as they are in most large-scale disasters, the problem of informational convergence becomes more acute. In such cases, a lively competition often develops between the general populace and the disaster relief agencies for access to the few remaining pre-existent channels, or for the substitute channels that are established or improvised following the disaster. There is substantial evidence to indicate that this competition works to the detriment of the formal disaster agencies, since the remaining channels or substitute facilities often are quickly monopolized by the large volume of informal inquiries and emergency messages.[19]

Conversely, however, it should be noted that when existing channels of communication are denied to the general public and are used exclusively for operational messages stemming from official organizational sources, the populace is forced to improvise informal, unofficial channels of communication. As a result, many of the most general and significant needs of the population are likely to escape official cognizance.

Current evidence suggests that the overwhelming majority of communications in recent large-scale disasters have been handled on a private, informal basis, either by word-of-mouth contact or by private use of telephone, telegraph, radio, and postal facilities. In the White County, Arkansas, tornado, for example, it was found that 69 per cent of all persons in the disaster areas and 71 per cent of all persons in contiguous and proximate areas derived most of their information concerning the disaster from personal contact. Moreover, in checking the accuracy of reports concerning particular persons killed or injured and the extent of damage, the population in all three areas relied primarily on direct perception and word-of-mouth sources rather than official disaster agencies.[20] Similarly, in the Worcester,

---

18. William A. Scott, "Public Reactions to a Surprise Civil Defense Alert in Oakland, California" (Unpublished report, Survey Research Center, University of Michigan, August 1, 1955), 16.

19. Cf. Harry E. Moore, Fred Crawford, et al., "Waco-San Angelo Disaster Study: Report of Second Year's Work" (Unpublished report, Department of Sociology, University of Texas, 1955), sec., "Mass Communication Agencies in a Disaster Situation," 1-20; Irving Rosow, "Public Authorities in Two Tornadoes" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, November 1954), 147, 295; and Robert V. Hamilton, Ross M. Taylor, and George E. Rice, Jr., "A Social Psychological Interpretation of the Udall, Kansas, Tornado" (Unpublished report, University of Wichita, October 1955), 65-66.

20. Marks, Fritz, et al., op. cit., I, 286-290.

Massachusetts, tornado, it is estimated that private communication channels accounted for at least ten to fifteen times the volume of messages handled by official public agencies.[21] We shall discuss the significance of these and similar findings in greater detail in later sections, but it might be noted here that the isolation of official agencies from the informal channels of communication probably accounts for their frequent failure to anticipate convergence problems.

The problem of controlling informational convergence is greatly complicated by the fact that the convergence is not limited to persons located in the zones near to the disaster site. Although the initial external personal convergence originates from contiguous and proximate zones, the external informational convergence originates simultaneously in many parts of the nation and world. As soon as news of the disaster is disseminated, persons in remote zones attempt to establish direct communication with persons or agencies in or near the disaster area, thus adding to the problem of internal informational convergence and often blocking vital channels from the disaster environs to the outside.

There are no complete inventories of the magnitude of this external informational convergence, but even the incomplete data indicate that it is enormous. In the Waco, Texas, tornado, for example, it is noted that the long distance dial system in Waco was set up to handle 100 telephone calls simultaneously, but within two to three hours after the tornado the incoming calls were so numerous that outgoing calls had to be delayed as much as six hours. "So great was the jam, the manager of the Waco office phoned the National Broadcasting Company in New York to broadcast an appeal to the nation asking that calls into Waco be restricted to real emergency messages."[22] In the twenty-four hour period immediately following the disaster, the telephone company handled 22,420 long distance calls (both incoming and outgoing). The normal load for a similar period was approximately 45 per cent less than this. Likewise, so many messages flowed through the local telegraph office that five additional sub-stations had to be opened. A total of nearly 37,000 messages were handled during a nine and one-fourth day period. Nearly 15,000 of these messages were handled on the day following the tornado, compared with a normal daily average of about 1,000 messages. A similar heavy flow of messages is noted for the post office, the commerical radio stations, the "Ham" radio operators, and MARS (Military Affiliate Radio System).[23] In the San Angelo, Texas, tornado, which was much

---

21. Rosow, op. cit., 128-139.

22. Moore, Crawford, et al., "Waco-San Angelo Disaster Study: Report of Second Year's Work," op. cit., sec., "Mass Communication Agencies in a Disaster Situation," 4.

23. Ibid., 5-18.

smaller in scope and severity, it is reported that local telephone traffic increased by 40 per cent, long distance calls almost doubled, and telegraph service increased by about 20 per cent.[24]

In the Flint-Beecher, Michigan, tornado, an estimated total of over 100,000 private inquiries on personal welfare via long distance telephone and telegraph were made during the six days following the tornado, in addition to a total of about 14,000 inquiries processed by the Red Cross. The volume of Western Union traffic was approximately four times its normal load during the four days after the tornado struck. In this four-day period, incoming messages outnumbered outgoing telegrams by four to three. On the first day, there were well over twice as many incoming as outgoing messages. On the second day, incoming and outgoing messages were almost equal, and on the third and fourth day, outgoing messages outnumbered incoming by a three to two ratio.[25]

The latter data indicate the reciprocal nature of the informational convergence process. The incoming inquiries tend to predominate during the initial period following the disaster and then diminish to be replaced by outgoing responses to these inquiries. Rosow points out that in both the Flint-Beecher tornado and the Worcester, Massachusetts, tornado, incoming and outgoing messages tended toward equalization. The outgoing messages, however, were in large part a delayed response to incoming inquiries.[26]

Both the scope of informational convergence and many of the difficulties that disaster agencies encounter in answering welfare inquiries are illustrated in the following account of the Texas City, Texas, explosion of April 16, 1947. The explosion killed about 500 persons, injured over 2,000 others, and caused property damage amounting to over sixty-six million dollars:

> The Texas City explosion was so devastating to human life and property that it was front-page news and preferred radio news for several days. The result was that thousands of people immediately sent inquiries about relatives and friends. These inquiries came in such tremendous volume that the wires were loaded with this type of service alone. The Red Cross received 41,610 messages, a great many of which were duplicates, since the number of persons inquired about was 8,320. Some of the difficulty in giving any kind of prompt service in answering these inquiries can be understood from the following facts:

---

24. Ibid., 7.
25. Rosow, op. cit., 200-205.
26. Ibid., 203.

*Red Cross Photo*

**PLATE 4**

INFORMATIONAL CONVERGENCE. Texas City, Texas, explosions of April 16-17, 1947. A few of the more than 41,000 people who used the Red Cross information services to inquire about relatives and friends in Texas City. Photo shows a public information center established at nearby Galveston. In most disasters the number of welfare inquiries handled by such public information centers is greatly exceeded by private telephone, telegraph, or face-to-face communications.

Before the war Texas City was a thriving industrial community with a population of approximately 5,000 people, which mushroomed to approximately 18,000 during the war period. It has been estimated that 55 per cent of the wage earners in Texas City did not live in the city, but in other cities and villages within a radius of 50 miles from their place of employment.

Furthermore, Texas City never had a city directory printed, and the telephone directory was of limited use in locating people because the mushroomed growth of the city had occurred during the war period when it was almost impossible for home owners to have telephones installed.

Injured people were scattered in 21 hospitals over a radius of 60 miles. An official death list was almost impossible to obtain. The Red Cross followed its traditional policy of giving out no lists, except those that were positively verified. One of the largest industries affected had lost its entire personnel records in the disaster.

Immediately following the explosion many thousands of persons left the city for addresses unknown; of these, 4,000 were sheltered and fed in Red Cross stations within a radius of 50 miles from the scene of devastation.

With all these problems it can readily be understood that delays were encountered to contact this scattered population. However, every effort was made, and eventually all wires were answered.

Some strange messages were received from outside of Texas. Some inquired about persons whose actual addresses were in other cities of Texas hundreds of miles away. Scores of peculiar situations developed. After exhausting every effort to locate a person, a reply would be sent saying: "Your son is not listed on any death or hospital list, nor can we find his name in any industrial records. If you want further service, please send more identifying information, such as street address, place of employment, etc."

It is amazing that in scores of cases the answers to this Red Cross telegram revealed that the men were never known to have been in Texas City but were simply missing persons who had not been heard from in years.

One woman wrote from Germany attempting to locate relatives who had resided in Texas but had not been heard from in 20 years.[27]

---

27. See next page.

From a purely objective viewpoint, as the foregoing account illustrates, the tremendous volume of external informational convergence cannot be justified or rationalized by resort to the actual number of persons directly affected by the disaster. In disasters where only a few hundred people are killed, injured, and rendered homeless, the total number of personal welfare inquiries may number in the tens and hundreds of thousands. How then can we account for this great volume of "unnecessary" convergence? We shall devote more attention to this question in later sections, but it might be noted here that the volume of external informational convergence (as well as other forms of convergence) is largely a function of (1) the accuracy and specificity of information concerning the geographic scope of the disaster and the population directly affected, and (2) the degree to which this information is rapidly gathered, evaluated, and disseminated to the appropriate receivers. Disaster reports leave little doubt that the dissemination of erroneous, ambiguous, and sensational information concerning the disaster and the failure to coordinate quickly the information-gathering and disseminating services are largely responsible for the immediacy and persistency of this problem.[28]

## Materiel Convergence

The spontaneous generosity and outpouring of unsolicited aid to disaster-stricken populations can be documented in every peacetime disaster. The value of such aid in facilitating both material and psychological recuperation cannot be underestimated. Nevertheless, this spontaneous generosity often has negative consequences which are unanticipated by both the donors and the recipient population. These negative consequences or problematic aspects of unsolicited or volunteered materiel aid are our major concern in this section.

Many disaster accounts refer to the "deluge" of supplies which "flood" into the disaster area and into hospitals and relief centers. Again, precise quantitative data on the magnitude of this materiel convergence are not contained in most disaster reports, but the available data indicate that these supplies: (1) normally arrive in volumes far in excess of the actual needs; (2) in large proportion, are comprised of unneeded and unusable materials; (3) require the services of large numbers of personnel and facilities which could be used for more essential tasks and functions; (4) often cause conflict

---

27. Texas City Explosion, April 16, 1947 ("American Red Cross document," No. ARC 1532 /Washington, D. C.: American National Red Cross, November 1948/), 19-21.

28. Marks, Fritz, et al., op. cit., I, 203; III, Appendix B-2, 44-46; and Rosow, op. cit., 10.

relations among relief agencies or among various segments of the population; (5) materially add to the problem of congestion in and near the disaster area; and (6) in some cases, may be disruptive to the local economy.

A graphic example of some of the problems created by this overabundance of goods is provided in the following detailed account by a local Red Cross representative in the White County, Arkansas, tornado:

> By Saturday afternoon /the day following the tornado/ all this clothing and food and all this vast store of supplies started moving into Searcy for distribution to the tornado areas. And most surely 90 per cent of it came to Searcy rather than any of the other areas in the state because this /general area/ was the hardest hit. But that created an enormous problem. There was no place to put it at Judsonia /the most devastated town/. No buildings to put it in. No buildings had been made available at Bald Knob for it. So we had to warehouse it and sort it and handle it here. That created a big problem. We had quite a few headaches. So much that was worthless rags. They had some pretty good ones. Somebody sent an old doggone big carton of falsies. We got a tuxedo, a nice one; it was in good condition. High button shoes to derby hats. No work clothes to speak of. We had some brand new stuff--some suits that I would have liked to have had. . . . but there was this vast accumulation of stuff that wasn't worth the transportation and maybe it came from Pennsylvania or Kansas or from a long distance at great expense. The fault is that we never had any experience with anything on as big a scale and we weren't expecting any carload lots--and that's the way it came in. Maybe three, four, five of these great big moving vans and loaded to the ceilings. We'd open the doors and it just fell out. And a great percentage of it was unsorted--just thrown together.
>
> The first batches of it came from Little Rock, Fort Smith, Harrison, West Memphis, Forest City, Batesville, Endicott, Independence County--all those northern counties. And it was needed and appreciated. Some of it came boxed and labeled--men's clothing, women's clothing, children's clothing--and usually when it was in that condition it was worthwhile apparel; it was usable. A lot of it was unfit for use--condemned by state health authorities. Unsanitary old mattresses full of bed bugs and torn up and soiled. As bad as folks needed mattresses, they couldn't be permitted to use those things. Well, when some of that stuff was hauled out and burned . . . there were rumors about how we were handling donated clothing; but it was done because it had to be done, so the State Board of Health said.
>
> Everything else worked pretty smoothly and pretty well according to plan and we had a plan, a committee, set up to handle donated goods.

But the enormous quantity, and the speed with which it arrived just swamped us. The mistake we made was not getting the clothes stopped quickly enough. We did eventually get it stopped until we could get our breath, and get some control of it; but it was coming from all over the state and outside the state. It was coming by Railway Express, by truck, by plane, by freight car. We used this large auditorium there at the Legion Hut where we had our offices. They thought that would take care of it. It couldn't. Enormous amount of floor space, but that was filled in two hours--filled ceiling high. One other big building--a used auto parts building out at the edge of town--probably a hundred feet long and sixty feet wide, with 14-foot ceiling. That was filled in 12 hours. And at the end of the night we had to open another building that covered half a city block. By the next day at noon it was impossible to get anything in it. In the meantime, we had directed as much as possible past Searcy to the nearby town of Kensett. They opened up the church and received them; opened up their fire station and received them. We had tents set up in Judsonia in the meantime and had some directed to those big tent warehouses. We got open the gymnasium in Bald Knob--you can imagine the size of that building--and had some sent there. After that we had to open a huge warehouse building--it has an enormous amount of space--and it was filled wham! --just like that. Some of the stuff sorted, boxed, and labeled--large quantity isn't. Some of it's junk, some of it's good--used cooking utensils, used furniture, bedding, lumber, potatoes--a freight carload of potatoes, a freight carload of tomato juice.

We finally closed everything up temporarily and said: "Now we'll make this building a sorting area only; we will not receive anything; we will not disburse anything. We'll make this building over here a disbursement place until we empty it." And by the time we'd emptied it, we had a good class of materials from the sorting area to move over. Four weeks later, this week, we will wind up and close that last warehouse. (What proportion of this clothing that arrived would you say was up to the standard you would really want?) Forty per cent maybe; sixty per cent of it was not good; it shouldn't have come into the area at all. It should have been held and sorted and the worthless stuff discarded and not transported. It's too much wasted motion. It took up the time of, I'd say, 500 volunteer workers for two weeks. Maybe more than 500. Women and men as far as Little Rock, Newport, and Conway, beside the folks from Searcy that worked on that proposition alone. They could have been rendering assistance in another form.[29]

---

29. Marks, Fritz, et al., op. cit., I, 281.

*Red Cross Photos*

**PLATE 5**

MATERIEL CONVERGENCE. (Top Photo) White County, Arkansas, tornado, March 21, 1952. Tons of clothing, bedding, household goods, and canned foods sent by persons and organizations from all over the nation are sorted by volunteer Red Cross workers in a Little Rock, Arkansas, warehouse. (Bottom Photo) One of the many clothing distribution centers set up in the White County area to supply tornado victims.

In the Waco, Texas, tornado, materiel convergence created similar problems:

> The flood of donated supplies and equipment coming into Waco early provided a problem, because no provision had been made for a central place in which such material could be received and from which it could be dispatched to the points needed. The Chief of Police said many persons would call and offer types of equipment or even manpower that were needed and would be told to please come to Waco as quickly as possible, but "a little later they would call and tell us they couldn't get into a certain place in town or they couldn't get into the downtown area due to traffic congestion."
>
> . . . No value was estimated for clothing since appeals had brought such a staggering response that workers were almost crowded out of the building. A full month after the tornado shipments of clothing were still arriving for use by the Salvation Army. Many of these were so badly worn they had to be sent to rag collectors, and other bundles required laundering--done free by local companies--but there remained a surplus of usable clothing.
>
> . . . When a warehouse was opened and sorting of clothing began, it was discovered that a number of persons appeared and began to grab clothing on the pretext of being volunteer workmen. Clothing was sorted according to age, sex, work clothes, winter clothing, and summer clothing, and placed in boxes and tagged for future use. After the disaster was over, some three tons of clothing remained on hand /in the Salvation Army warehouse/. This was made available to the various agencies in the city dealing with destitute families. [30]

This materiel convergence, like the other forms of convergence, is often national and international in scope. In the Holland flood disaster, large donations of material and money came from over thirty nations of the world.[31] According to one investigator, blankets alone arrived in such large quantity that they would be sufficient to supply the entire Dutch nation for over one year. [32] Current data suggest, however, that the volume of materiel aid

---

30. Harry Estill Moore, "Cities in Crisis: A Study of the Tornado Disasters in Waco and San Angelo, 1953, 1954" (MS, Department of Sociology, University of Texas, 1956), sec., "Cities in Crisis," 19, 24-25.

31. ISONEVO, op. cit., I, 11.

32. Dorothy L. Keur, in panel discussion on "Change, Stress, and Community Organization," held at Annual Meeting of the Society for Applied Anthropology, Chicago, Illinois, June 21, 1953.

normally tends to decline with distance from the disaster area. In the Waco-San Angelo, Texas, tornado, for example, an analysis of a sample of monetary donations showed that, although thirty-two states and two foreign countries were represented by the donors, 79 per cent of the donors in the sample were residents of Texas. [33]

Unquestionably a major factor in the great volume of materiel convergence is the use of radio and other mass media of communication in disseminating supply appeals. The needs in disaster are strategic and selective needs. Equipment, supplies, and services are needed in particular quantities, types, times, and places. The mass media are not well adapted to serve this strategic supply purpose, since there is little control that can be exercised over the potential donors once the appeal is made. The central difficulty in the use of these media, in other words, is that they require institution of a screening function after the supplies begin arriving rather than prior to their solicitation.

There are numerous examples of how the indiscriminant use of mass media for soliciting aid have greatly contributed to convergence problems. In the Flint-Beecher, Michigan, tornado, for example, a public appeal for flashlights was made over the radio. Over 500 persons individually responded by driving their automobiles toward the stricken area to donate their flashlights, thus greatly aggravating the severe traffic congestion. [34] Likewise, the congestion around hospitals and medical centers is frequently augmented by mass appeals for blood donors. In the St. Paul, Minnesota, plant explosion, 650 persons appeared at the Red Cross blood bank after a broadcast call for donors; 400 of these persons were turned away, because their blood was not needed. [35] In the Flint-Beecher tornado, just as one of the major hospitals was beginning to achieve order in the processing of disaster victims, it was suddenly confronted with about 2,000 unwanted blood donors who appeared as a result of appeals broadcast over the local radio stations. [36] In Waco, Texas, as a result of a similar appeal, a line formed outside the Red Cross blood center within an hour or two after the tornado, forcing the center to open and to work for 48 hours without respite, although it had been closed because all hospitals and military establishments had a three months' supply on hand. [37]

---

33. Moore and Crawford, "Waco-San Angelo Disaster Study: First Annual Report," op. cit., sec., "Disaster, Donors, and Donations," 5.

34. Rosow, op. cit., 384.

35. Marks, Fritz, et al., op. cit., III, Appendix B-6, 110.

36. Rosow, op. cit., 194-197.

37. John Walker Powell, "An Introduction to the Natural History of Disaster" (Unpublished final report, Disaster Research Project, Psychiatric Institute, University of Maryland Medical School, June 30, 1954), chap. II, 10.

## Summary

Although current data on the magnitude and scope of convergence are inadequate for formulating precise propositions and quantitative predictions, they are sufficient to establish the universality of convergence as a disaster control problem. In every recent disaster, irrespective of the geographical location and size of the stricken community, or the type of disaster, the magnitude of convergence has been great enough to hinder organized rescue and relief operations or otherwise impede the restoration of the orderly processes of social life; and to require the institution of some methods of traffic, crowd, communication, and supply control.

The relative magnitude and scope of convergence, of course, will differ according to the type of disaster, the size and type of community affected, the time phases of the disaster, the methods used in handling the problem by the authorities, and other conditions. Further study and research on these differences are definitely indicated. Ultimately, however--if for the sake of immediate clarity, we accept an oversimplification of a very complex set of phenomena--it may be said that both the extent of convergence (all forms) and the transition from one type to another vary directly with the efficiency of disaster organization. In the present context, efficiency of organization may be defined by the extent to which the needs which impel convergence are anticipated and taken into account in disaster plans and operational procedures. In the following chapter we turn to a more detailed consideration of these needs.

## CHAPTER III

## TYPES OF CONVERGERS

We previously have noted the general tendency to characterize all "unauthorized" external convergers as "sightseers." As the NORC investigators[1] and Rosow[2] point out, the term "sightseers" has neither research nor operational utility; it simply obscures a number of important distinctions in the nature and needs of the converging population. In this section, we turn to a more detailed examination of present knowledge concerning the types of persons who engage in convergence behavior.

In examining the types of convergers we are, of course, attempting to illuminate the motivations for convergence. Since there have been no systematic motivational studies, however, we necessarily must limit our discussion to the broad motivational factors which have been documented in disaster research studies.

In the following discussion, we delineate five major types of informal or unofficial convergers: (1) the returnees, (2) the anxious, (3) the helpers, (4) the curious, and (5) the exploiters. These do not refer to mutually exclusive categories of persons, but to dominant motivations at a given point in time. They represent social roles that all persons potentially may play, depending on their temporal, spatial, and psychological relationship to the disaster event. The same persons may shift from one role to another as they acquire new or additional information or as they confront different physical or social conditions.

The five types are discussed roughly in the order of legitimacy assigned to them by disaster-struck populations--ranging from those which are normally conceived to have inalienable rights of access to the disaster area to those whose movement into the area should be curtailed or prevented.[3]

---

1. Eli S. Marks, Charles E. Fritz, et al., "Human Reactions in Disaster Situations" (Unpublished report, National Opinion Research Center, University of Chicago, June 1954), I, 237.

2. Irving Rosow, "Public Authorities in Two Tornadoes" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, November 1954), 302-303.

3. This ordering by normal order of legitimacy is used here simply as a heuristic device, and should not be interpreted to mean that constraint or negative sanction is necessarily the most effective method of controlling those types which disaster-struck populations normally rank low in legitimacy of

## The Returnees

Under this heading, we classify the disaster survivors who have left or who have been evacuated from the disaster area, but who, for various reasons, wish to return to the homesite. The category also includes residents of the disaster area who were temporarily absent from the community when the disaster struck and non-resident property owners who return to assess the nature of the damage and loss; and "substitute" returnees--relatives and friends of disaster victims who enter the disaster area to assess the victims' losses, and to retrieve, guard, and salvage their property.

In any disaster having a relatively large scope of physical destruction, death, and injury, we may expect the temporary evacuation of a high proportion of the total impact population. The evacuees will consist of injured persons, relatives and friends of the dead and injured, persons rendered homeless by destruction and damage to their abodes, and persons who have assisted others in transportation to hospitals, medical aid centers, and sources of shelter aid. During the days and weeks following a disaster, the evacuees will also include persons who have remained or returned to live in the disaster area but who leave temporarily to obtain supplies, or to engage in work or other activities outside the area.

Evacuation and convergence are essentially reciprocal processes in disaster. Most of the evacuees will become returnees at some time period following a disaster's impact. The exact time of return, of course, will be determined by such factors as the accessibility of the disaster-struck area, the primary or secondary threats that remain in the area, the means of transportation available for return, the degree of injury or incapacitation of the evacuees, the degree of housing destruction, and occupational potentials in the area. In most peacetime disasters, particularly those of the single, brief impact type without lingering danger, the original inhabitants of the area have begun to filter back into the area within a few hours after the disaster.

There appear to be two basic motivations for the convergence of these returnees: (1) the immediate goals of locating and helping other persons, and assessing damage to and protecting private property, and (2) the longer range goals of returning to familiar surroundings, and re-establishing pre-existent social relationships.

---

purpose. As we will note in greater detail in Chapter IV, the effective control or prevention of "illegitimate" forms of convergence requires recognition of the different informational needs of these types as well as those which are viewed as "legitimate."

*Red Cross Photo*

**PLATE 6**

THE RETURNEES. Members of a Woodward, Oklahoma, family return to survey the remains of their home and salvage their belongings after the tornado of April 9, 1947. The tornado destroyed nearly half of the city's residences and business houses.

As a number of investigators have pointed out, property values normally rank low in the hierarchy of values during the initial emergency period following a disaster.[4] In disasters which pose danger to life, concerns for property and physical possessions are temporarily forgotten. A disaster-struck population manifests overwhelming concern for human beings--family members, relatives, friends, neighbors, and other community residents--before it turns attention to property considerations.[5]

Once the immediate and overriding concern for the safety of human life has been satisfied, however, the concern for property re-emerges. The time following a disaster when this concern manifests itself is largely dependent on the degree of familial and personal involvement in the disaster. Families who have experienced high personal losses (death or severe injury to family members) may not personally return to the disaster site for days or weeks following the disaster. Those who have minimal involvements, on the other hand, may stay in the area or return to the disaster site within a brief time after impact. Thus, the return of permanent residents is selective in nature and dependent on the extent and type of personal losses suffered during the disaster.

Even those who suffer high personal losses, however, may send substitute returnees to the disaster site to assess the nature and extent of physical destruction, gather and collect personal belongings, and transport them to the victim's place of temporary residence or to storage places. This is one of the forms of assistance most frequently rendered by relatives, neighbors, and friends of the victims.

---

4. See Marks, Fritz, et al., op. cit., I, 506; and Leonard Logan, Lewis M. Killian, and Wyatt Marrs, A Study of the Effect of Catastrophe on Social Disorganization ("Technical Memorandum," No. ORO-T-194 /Chevy Chase, Maryland: Operations Research Office, July 22, 1952/), 105-106.

5. In general, domesticated animals (farm livestock, household pets) tend to occupy an intermediate position in the hierarchy of values--i.e., between human beings and inanimate objects. In predominantly rural communities, concern for farm animals may take precedence over concern for people outside the immediate circle of family members, relatives, and friends. Cf. Instituut voor Sociaal Onderzoek van het Nederlandse Volk (ISONEVO), Studies in Holland Flood Disaster 1953 (Washington, D. C.: National Academy of Sciences-National Research Council, Committee on Disaster Studies 1955), II, 178-180.

In virtually every disaster it is possible to cite instances of persons taking action with reference to household pets, livestock, or material objects prior to action oriented toward more general human needs. In a large proportion of such cases, however, the actors are either unaware of the fact that other people are in need of help or they are not in a position to render the needed assistance.

The concern for property is only a part of a larger concern and desire to reinstitute or stabilize the familiar modes of life. While the initial concern of returnees may center on the condition of their property and personal possessions, the major goal, of which this concern is only a part, is to re-establish some semblance of their normal life pattern within the same surroundings which they left.[6] As Wallace has indicated, the familiar cultural pattern or "maze way" has a powerful effect in structuring human behavior in disasters.[7]

This "pull of the familiar" can be documented in many disaster studies, both wartime and peacetime. Even in the face of continuing threats to life, people may derive greater security from life in familiar surroundings than from surroundings or living arrangements which are unfamiliar but objectively more secure. This is particularly the case when the conditions of evacuation involve separation of families or the transplantation of family units into highly divergent or unfamiliar cultural settings.[8] Under these conditions,

---

6. Both peacetime and wartime studies consistently show that the vast majority of disaster survivors return to the same homesite and continue life in the same area. For supportive evidence in peacetime disasters, see Harry E. Moore and Fred R. Crawford, "Waco-San Angelo Disaster Study: First Annual Report, 1 July 1953 - 1 July 1954" (Unpublished report, Department of Sociology, University of Texas, 1954), sec., "Movement of Place of Residence of Disaster-Affected Families," 9-13; William H. Form, Sigmund Nosow, Gregory P. Stone, and Charles M. Westie, "Rescue Behavior in the Flint-Beecher Tornado" (Unpublished report, Social Research Service, Michigan State University, 1956), 126-127; Samuel Z. Klausner and Harry V. Kincaid, "Social Problems of Sheltering Flood Evacuees" (Unpublished report, Bureau of Applied Social Research, Columbia University, 1956), 41-43; and Marks, Fritz, et al., op. cit., I, 213.

For pertinent wartime findings, see Fred C. Ikle, The Social Effects of Bombing ("Technical Research Report," No. 17 /Maxwell Air Force Base, Alabama: Human Resources Research Institute, Air Research and Development Command, July 1953/), 206-226; Fred C. Ikle, "The Effect of War Destruction upon the Ecology of Cities," Social Forces, XXIX, No. 4 (May 1951), 383-391; and Leo Grebler, "Continuity in the Re-building of Bombed Cities in Western Europe," American Journal of Sociology, LXI, No. 5 (March 1956), 463-469.

7. Anthony F. C. Wallace, "The Disruption of the Individual's Identification with His Culture in Disasters and Other Extreme Situations" (Paper presented at Conference on Theories of Human Behavior in Extreme Situations, sponsored by the Committee on Disaster Studies, Division of Anthropology and Psychology, National Academy of Sciences-National Research Council, Vassar College, Poughkeepsie, New York, February 12-13, 1955).

8. Michael Young, "The Role of the Extended Family in a Disaster," Human Relations, III, No. 3 (1954), 383-391.

the highly reciprocal nature of evacuation and convergence processes are dramatically demonstrated. Titmuss, for example, in summarizing the British evacuation experience during World War II, points out:

> The sanctity of the home, poor or rich, town or country, was paramount. . . . The principal enemy of evacuation was the solidarity of family life among the mass of the people. The urge to re-unite became stronger as the social cleavages pressed down in one way or another on mother and child.
>
> . . . They returned in hundreds of thousands during the winter of 1944-45 to a dilapidated London, to damaged and uncomfortable homes, and to the accompaniment of rockets. They knew--or they thought they knew--that the war was ending. They could not wait for the Government's plans to mature; they were in a hurry to rejoin their families and get a good place in the housing queue. [9]

Similarly, Bernert and Ikle, in their systematic review of the evacuation experiences of both Britain and Germany, conclude that "familiarity with the old habitat" was an important factor in the high rate of return of evacuees to their home communities. [10]

In his survey of the rebuilding of bombed cities in Western Europe, Grebler notes that even where cities were virtually destroyed, they have, with few exceptions, been rebuilt on the same site and the new city centers occupy the same areas as before the war. Cassino, Italy, was completely reduced to rubble, its inhabitants scattered all over the countryside and in distant cities:

> Within a few weeks of the end of active battle, people drifted back to live in caves, cellars, and dugouts, without food or means of livelihood, in an area infested with malaria and 550,000 mines. . . . their action symbolizes the power of the city over people, even when all the physical features have disappeared. [11]

In the atom-bombed city of Hiroshima, the evacuation of survivors was converted into a mass convergence response within twenty-four hours following the attack, and in both Hiroshima and Nagasaki a high proportion of the population returned to take up permanent residence in the rubble of their homesites within a few months following the explosions.

---

9. Richard M. Titmuss, Problems of Social Policy (London: H. M. Stationery office and Longmans, Green, and Co., 1950), 180, 433-434.

10. Eleanor H. Bernert and Fred C. Ikle, "Evacuation and the Cohesion of Urban Groups," American Journal of Sociology, LVIII (1952), 133-138.

11. Grebler, op. cit., 463-464.

> Although both Hiroshima and Nagasaki required almost complete rebuilding and lacked an adequate food supply, the inhabitants gradually returned to live in improvised shacks. Within three months the population in each city was back to about 140,000.[12]

Individual personal accounts of early returnees to the disaster sites in Hiroshima and Nagasaki may be found in Hersey's Hiroshima, Hachiya's, Hiroshima Diary, Nagai's, We of Nagasaki, and Siemes, "Hiroshima - August 6, 1945".[13]

There is evidence to suggest a class and age differential in the speed with which residents return to the disaster site. Titmuss presents data indicating that lower-class evacuees returned to British cities earlier and in greater numbers than upper class persons.[14] Bernert and Ikle conclude: "According to World War II experience this link /i.e., the tie with the customary neighborhood and habitat/ is especially strong for elderly people in economically poorer districts; they are often unwilling to be evacuated from their area, even if their homes have been destroyed."[15]

A similar conclusion is reached by Diggory and Pepitone in their review of historical sources on epidemic-type disasters. They point out that there are consistent observations showing that the lower socio-economic classes are more likely to remain in an epidemic area or return more quickly to the area after evacuation than persons in the middle and upper socio-economic classes. Among other reasons for this differential, they give the following:

> The range of the familiar is narrower in the lower than in the upper socio-economic classes. It is a matter of common observation as well as experimental fact that familiar surroundings are conducive to feelings of security and consequently are preferred to evacuation into unknown surroundings.[16]

---

12. Irving L. Janis, Air War and Emotional Stress (New York: McGraw Hill Book Co., 1951), 49-50.

13. John Hersey, Hiroshima (New York: Alfred A. Knopf, 1946); Michihiko Hachiya, Hiroshima Diary (Chapel Hill: The University of North Carolina Press, 1955); Takoshi Nagai, We of Nagasaki (New York: Duell, Sloan & Pearce, 1951); Father S. J. Siemes, "Hiroshima--August 6, 1945," Bulletin of the Atomic Scientists, I (May 15, 1946), 2-6.

14. Titmuss, op. cit.

15. Bernert and Ikle, op. cit., 138.

16. J. C. Diggory and A. Pepitone, "Behavior and Disaster" (Unpublished report, University of Pennsylvania, October 1, 1953), 17. Also see James C.

We may conclude, then, that one important type of converger is represented by the returnees. If the disaster site is accessible and the threat of further danger to life is not immediately apparent, the convergence of returnees may be expected to begin within a few hours following the disaster--after the immediate and pressing needs of medical care, shelter, and sustenance for intimates have been satisfied.[17] This movement back to the disaster site will continue, depending on the scope of the disaster, for days, weeks, or months following the emergency period.

One of the major control problems in handling this type of converger revolves around recognition of the returnees as legitimate convergers. In any society which places strong emphasis upon private property rights, the returnees will normally have a strong sense of legitimacy in entering a disaster area and may intensely resent any attempt to prevent them from so doing unless the reasons for exclusion are obvious and compelling.[18]

The problem of recognition is complicated by the fact that legitimate residents often have lost or do not have with them their papers of identification or proof of residence, and by the fact that they often send non-resident relatives or friends into the disaster area to guard or retrieve their property. Some of the acts normally interpreted by the disaster-struck populace as looting may in actuality be the collection and transport of disaster victims' property by unknown relatives or friends.[19] It is interesting to note that this is one of the problems which complicated the identification of looters in bombed German cities during World War II.[20]

---

Diggory, "Knowledge of Crisis Behavior Derived from Historical Sources" (Paper presented at Annual Meeting, Society for Applied Anthropology, Indiana University, Bloomington, Indiana, May 5, 1955).

17. In the Flint-Beecher, Michigan, tornado, it was found that the majority of persons who left the impact area within the first day returned during the same twenty-four hour period. The reasons for return most frequently cited were: (1) to protect or check their property; (2) to resume rescue activities; (3) to resume family routines; and (4) to check on their kin. See Form, Nosow, Stone, and Westie, op. cit., 82-83.

18. For examples of resentment against exclusion, see Moore and Crawford, op. cit., sec., "Cities in Crisis," 9-11; and Marks, Fritz, et al., op. cit., I, 241-254.

19. Cf. Marks, Fritz, et al., op. cit., I, 248-249.

20. U. S. Strategic Bombing Survey (USSBS), The Effects of Strategic Bombing on German Morale (Washington, D. C.: U. S. Government Printing Office, May 1947), I, 89.

## The Anxious

In an isolated, preliterate community, the social boundary of a disaster may correspond rather closely with the spatial limits of the community or village directly affected. In studying disasters in modern mass societies, however, we must divest ourselves of the notion that a disaster-affected population or community is confined to people who reside in the area directly struck by the disaster agent. In a fundamental sense, the disaster-struck population consists not only of the people directly affected by the disaster but also of people who are indirectly affected by virtue of their identification with disaster victims or the stricken community.

The frequent migrations and great internal spatial mobility of population in modern societies have had the effect of spatially separating kinship and friendship groups. The circle of relatives and friends transcends the spatial boundaries of cities, states, and nations. This pattern of spatial mobility is particularly accentuated in the United States, where there is a high degree of both permanent and temporary spatial separation of kinship and friendship groups. Internal and external migrations have resulted in the breakup of extended kinship groups to such an extent that perhaps nearly every family in the United States has blood relatives living in other parts of the nation or in foreign countries.[21]

In addition to this permanent separation of extended family members, there is also a high degree of temporary separation of the primary family at any given point in time. The great bulk of this type of separation occurs during daylight hours, as members of the family commute to places of work, shopping centers, and schools.[22] Thus, the separation distance is relatively small. In addition, however, many primary families are more distantly separated in space and time. Husbands and fathers are frequently on business trips to distant cities, grown children are attending college or working in other cities, and members of the family are on vacation or visiting distant relatives or friends.

---

21. This statement represents a direct extrapolation from common observation and general knowledge of internal migration in the United States. So far as the writers were able to determine, there have been no systematic studies of the spatial distribution of kinship groups on a national scale. A study of a national sample of families with regard to this problem would be useful from both a practical and a theoretical standpoint.

22. For an example of the extensiveness of this commutation movement in metropolitan areas, see Gerald W. Breese, The Daytime Population of the Central Business District of Chicago (Chicago: University of Chicago Press, 1949).

This spatially transcendent quality of kinship and friendship groups in American society is a fact of paramount importance for disaster management and control. Practically speaking, it means that the effective unit of disaster management is not confined to the disaster population, but extends to persons and groups throughout the nation and various parts of the world. In this sense, any large-scale community disaster in the United States becomes a national or international disaster--vitally affecting persons, organizations, and technical facilities located at points widely separated from the disaster scene.

The separation of primary and extended family members and friendship groups is perhaps the most significant single fact to comprehend in understanding the large amount of anxiety-motivated convergence that occurs in disasters. A word-of-mouth announcement, radio or television broadcast, or newspaper story that conveys, for example, the information: "City X has been struck by disaster; N number of persons are reported killed and injured," becomes an immediate anxiety-arousing stimulus for all persons who have family members, relatives, close friends, or other significant identifications in the disaster-struck community. This anxiety-stimulating news usually starts a complete "chain reaction" of information-seeking behavior that places great strains or overloads on existing communication and transportation facilities. Persons in zones contiguous or proximate to the disaster scene who believe that they have loved ones in the disaster area usually attempt to phone their homes or drive to the area. Persons in distant cities phone newspaper offices, broadcasting studios, and other information centers to get further information, or attempt to communicate directly with persons or agencies in or near the disaster area by long distance telephone or telegraph. Thus the communication networks and roadways leading toward the disaster area often become seriously overloaded almost immediately after news of the disaster becomes disseminated.

Anxiety over the whereabouts and condition of loved ones is clearly one of the major determinants of personal convergence, both internal and external. Beginning within moments after the impact of an instantaneous disaster, survivors in the impact area begin their anxious search for missing family members. They are shortly joined by impact-area residents who are temporarily outside the impact zone and by relatives and friends who reside in contiguous and proximate zones. Wallace, in his study of the Worcester, Massachusetts, tornado, describes the "hundreds of fathers, mothers, sons, and daughters of residents of the impact area, abandoning their cars in the filter area and running into the impact area on foot to find and help their families."[23] These persons began arriving in large numbers within the first

---

23. Anthony F. C. Wallace, Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation (Committee on Disaster Studies, Report No. 3 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 392, 1956/), 74.

half hour after the tornado. Many similar examples can be documented from virtually every recent disaster studied.[24]

This anxiety-motivated convergence has provided immediate problems of congestion and "confusion" in the disaster area, and at medical, communication, and relief centers located in the contiguous and proximate zones. The problems continue in the contiguous and proximate areas for days and weeks following the disaster as convergers from more distant places attempt to locate friends or relatives or inquire about their welfare. Hospitals, almost universally, find that one of their major problems is to furnish information to persons who are desperately anxious about the location and condition of the missing.[25] Red Cross and other welfare or information centers are often deluged with incoming telephone and telegraph inquiries by the anxious living in distant communities.[26]

There is little systematic knowledge of the extent of external personal convergence by type of converger, but present data suggest that the volume of external convergence is very large, and that a considerable proportion of the total volume is comprised of a combination of anxious and help-motivated persons. In its study of the White County, Arkansas, tornado, NORC found that face-to-face contact was the most prevalent means of communication between residents of the disaster area and their out-of-town relatives and friends. At least 52 per cent of all families in the disaster area had one or more out-of-town relatives or friends come to visit them during the first two

---

24. For other examples see Marks, Fritz, et al., op. cit., III; ISONEVO, Op. cit., III; William H. Form, Sigmund Nosow, Gregory P. Stone, and Charles M. Westie, "Final Report on the Flint-Beecher Tornado" (Unpublished report, Social Research Service, Continuing Education Service, Michigan State College, 1954); and Logan, Killian, and Marrs, op. cit.

25. See John W. Raker, Anthony F. C. Wallace, Jeannette F. Rayner, and Anthony W. Eckert, Emergency Medical Care in Disasters: A Summary of Recorded Experience (Committee on Disaster Studies, Report No. 6 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 457, 1956/); Henry J. Bakst, Robert L. Berg, Fred D. Foster, and John W. Raker, "The Worcester County Tornado: A Medical Study of the Disaster" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, January 17, 1955 /Limited Distribution/); Ida M. Cannon, "Social Services Activities," in Management of the Cocoanut Grove Burns at the Massachusetts General Hospital (Philadelphia: J. B. Lippincott Co., 1943), 9-13; J. L. H. Paterson, "Letters from Shanghai: A Hospital in the Civilian War Zone," Lancet, CCXXXIII (September 18, 1937), 709-710; and J. L. H. Paterson, "More Letters from Shanghai," ibid., (October 2, 1937), 819-828.

26. See Rosow, op. cit., and Marks, Fritz, et al., op. cit., II, Appendix B-2, 45.

*INP Photo*

**PLATE 7**

THE ANXIOUS. Cocoanut Grove Night Club fire, Boston, Massachusetts, November 28, 1942. Anxious relatives and friends search for missing loved ones while first aid personnel administer artificial respiration to several of the victims overcome by smoke. The fire killed 491 people and injured more than 200 others.

weeks following impact. It is probable that most of these out-of-town visitors came from proximate zones, within, say, a hundred mile radius; but persons from many states in the Union and a few foreign countries were represented.[27]

A study of 231 evacuee families in the Farmington-Unionville, Connecticut, flood of August 1955, showed that 163 families, or 70 cer cent of the total sample, had out-of-town relatives and friends visit them during the first month following the flood. Each of these families had an average of about six visitors during the month; thus the total number of external personal convergers for this sample alone was nearly 1,000 persons. Anxiety over the whereabouts, safety, and welfare of the victim families was the most frequently cited reason for these visits. The desire to help the victim family by direct physical assistance (e.g., aid in moving belongings, clearing debris, taking care of children, bringing supplies of food, clothing, bedding, etc.) was the next most frequent motivation for the convergence. Over 60 per cent of the sample families also received long distance telephone calls or telegrams during the first month following the flood and, like the personal visits, the most frequently ascribed reasons for the communications related to anxiety or concern over the victim families. Although the majority of external visitors and communicators were residents of the State of Connecticut (80 per cent of the visitors and 61 per cent of those who phoned or telegraphed), approximately 25 different states and five countries or areas outside the continental United States were represented by both types of convergers.[28]

The need to establish face-to-face or verbal contact appears essential for the relief of anxiety resulting from uncertainty over the condition of loved ones. Second-hand information (no matter how accurate the information or how trusted the communicator) is only a palliative; it is not a solution for the anxiety converger. NORC and other investigators have noted that persons are not satisfied even by the verbal reassurances of relatives or close friends;

---

27. Marks, Fritz, et al., op. cit., I, 289.

28. These findings are based upon preliminary tabulations of interview data collected for the authors by the Bureau of Applied Social Research, Columbia University, in a larger study of evacuee-host relationships in the Farmington-Unionville, Connecticut, flood of 1955. The authors formulated a number of questions designed to obtain data on the number and types of personal and informational convergers by time phases following the disaster, relationship to the family, place of origin, mode of travel or communication, and reasons for convergence. These questions were included in the interviews with the evacuees. Since it was not possible to complete the analysis of these data prior to publication of the present report, a detailed analysis of these materials will be presented in a future report or publication. See Klausner and Kincaid, op. cit., for a report on the larger study.

they want to see, hear, and feel the presence of the loved one being sought.[29] Direct contact with loved ones appears to be a potent factor both in the relief of anxiety symptoms for the converger and in providing emotional reassurance for the disaster victim.[30]

Uncertainty over the condition of loved ones, of course, is not the only anxiety-provoking factor in disasters, although it is a potent one. Even when the anxious converger has certain knowledge of the physical safety of loved ones, there remains the concern over how the person has withstood the fearful experience, the uncertainty about future plans, and anxiety over the fulfillment of essential role expectations and obligations. In virtually every society, there is a general social expectation that persons who have undergone a frightening and depriving experience need the presence of intimates for emotional reassurance, if not for physical assistance. Knowledge of the physical safety of the loved one cannot fulfill the familial and friendship obligations of materially assisting in time of trouble. Failure to provide this expected assistance to disaster victims is perhaps one of the prime producers of guilt reactions among survivors during the later adjustments to the disaster experience.[31]

These "crisis role obligations" are powerful forces in re-establishing and strengthening social solidarity among persons whose normal social relationships are tenuous or minimal. Relatives and friends who had little or no previous social contact are again drawn together in a tight web of mutual concern and sympathy. The extended family, the neighborhood, and friendship groups re-emerge as significant groups in structuring behavior in disasters.[32] It is this widening of social relationships that seems to account for the widespread and persistent nature of anxiety convergence. As news spreads outward from the disaster site, successive circles of kinship and friendship groups are caught up and involved in the disaster experience, creating a wave-like convergence of anxious persons on the disaster scene.

## The Helpers

Formal relief and control agencies normally keep some form of record of the extent and type of assistance which they render to a disaster-struck

---

29. Marks, Fritz, et al., op. cit., I, 508.

30. Wallace, op. cit., 118.

31. Nagai, op. cit.; Wallace, op. cit., 141-142; and John Walker Powell, "An Introduction to the Natural History of Disaster" (Unpublished final report, Disaster Research Project, Psychiatric Institute, University of Maryland Medical School, June 30, 1954), chap. III, 62.

32. Young, op. cit.; Wallace, op. cit., 95; and Klausner and Kincaid, op. cit., 46-49.

population. The great bulk of the informal, volunteer assistance, on the other hand, usually goes unrecorded, unnoticed, or unevaluated. The result is that formal relief and control agencies frequently over-estimate the proportional extent of their own efforts in relieving the suffering of disaster victims and grossly underestimate the extent of informal assistance.

Recent disaster studies repeatedly have shown that, with the possible exception of first-aid and medical care, a significant proportion of the emergency relief and restorative activity can be and actually is handled on an informal, unofficial basis. The NORC studies, for example, have shown that most of the initial relief work during the emergency period--rescue, transportation to hospitals, provision of emergency shelter, assistance in clearing debris, traffic direction, salvaging property, and providing emotional support--has come from informal rather than formal sources.[33] Similar documentation of the significance of volunteer assistance may be found in many other investigations of both wartime and peacetime disasters, in the United States and in foreign countries.[34]

The particular forms of aid rendered informally on a voluntary basis may vary widely, of course, in terms of such factors as the speed with which organized outside rescue and medical forces arrive on the disaster scene, the availability of essential rescue and other equipment, and the skills and resources of the affected population. A large share of the volunteer aid in peacetime disasters can be attributed to the fact that organized disaster forces have not arrived in sufficient strength and with sufficient equipment and supplies to render the needed assistance during the early stages of disaster. Current findings suggest that, although the majority of emergency tasks will be handled by a disaster-struck population or by persons in contiguous or proximate zones when no formal or institutionalized solutions are available, they will turn over many of the tasks to formal, organized forces if the latter can better supply the need.[35]

There are a number of disaster needs, however, in which disaster-struck populations have demonstrated a consistent preference for private and informal solutions over public and formal solutions, even when the latter

---

33. Marks, Fritz, et al., op. cit. I, 508-509.

34. See Titmuss, op. cit.; Bernert & Ikle, op. cit.; Ikle, The Social Effects of Bombing, op. cit.; Form, Nosow, Stone, and Westie, "Rescue Behavior in the Flint-Beecher Tornado," op. cit.; Rosow, op. cit.; Moore and Crawford, "Waco-San Angelo Disaster Study: First Annual Report," op. cit.; and Roy A. Clifford, "Informal Group Actions in the Rio Grande Flood" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, February 1955).

35. Powell, op. cit., chap. III, 44.

objectively may be more adequate than the former. This is most dramatically demonstrated in the area of emergency shelter or housing. The overwhelming majority of persons who are made homeless by disasters prefer to "double-up" in homes with relatives and friends rather than take advantage of available public shelters or make formal requests for housing.[36] This tendency perhaps can best be explained, as Powell has done, by the statement that "the need is to be not just cared for but cared about."[37] It also reemphasizes the powerful influence of familiarity and intimacy of relationship in channeling informal aid in disasters.

There appears to be agreement among disaster researchers on the general pattern of informal help convergence. Both Rosow[38] and NORC[39], for example, point to a hierarchy of orientations to help which begins with the most intimate relationships and ends with the most remote and formal relationships. As Rosow states it:

> Victims look first to family members, intimate friends and relatives; secondly, to other friends and neighbors; then to anonymous community members and to various membership associations (such as unions, employers, church groups, etc.); fourth, to the most familiar public and quasi-public organizations, especially the newspapers, radio, police and such institutions as /community hospitals/ and only finally to the public institutions specifically set up to deal with victims' problems of relief, welfare, reuniting separated families, etc. This reflects a continuum from informal personal to formal institutional sources of aid, with values of self-help and avoidance of public help predominating.[40]

Empirically, the convergence of help-oriented persons appears to follow roughly this pattern of intimacy of relationship. The initial convergence is internal person-oriented convergence, as the survivors in the disaster-struck area try to locate and assist members of their own family. Once family concerns are satisfied, attention turns to other relatives, neighbors, and

---

36. ISONEVO, op. cit., II, III, IV; Klausner and Kincaid, op. cit.; Rosow, op. cit.; Marks, Fritz, et al., op. cit., I, 167-172; Wallace, op. cit., 95; Ikle, The Social Effects of Bombing, op. cit.; Fred C. Ikle and Harry V. Kincaid, Social Aspects of Wartime Evacuation of American Cities (Committee on Disaster Studies, Report No. 4 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 393, 1956/).
37. Powell, op. cit., chap. II, 51.
38. Rosow, op. cit., 466-467.
39. Marks, Fritz, et al., op. cit., I, 506-507.
40. Rosow, loc. cit.

*AP Photo*

**PLATE 8**

THE HELPERS. Los Angeles, California, February 20, 1947. Volunteer rescue workers carry a blanket-covered victim from the scene of an explosion which destroyed a downtown building in Los Angeles, killing 30 persons and injuring 100 others.

friends, and then to more broadly-oriented community concerns.[41] The amount of movement that takes place within a disaster area as intimates search for one another, engage in rescue of the trapped, and transportation of the injured, is undoubtedly tremendous, and apparently accounts for much of the "confusion" often ascribed to the activity in impact areas.

The speed and volume of external help convergence is determined essentially by personal identification with victims in the area and spatial proximity to the disaster area. The early volunteer arrivals are most likely to be those from the contiguous zone who have directly perceived some of the effects of the disaster or who are suddenly confronted with requests for aid from the victims who are leaving the area. This contiguous-zone group constitutes the first wave of informal helpers arriving at the scene.

Successive waves of external personal convergers will occur as the news spreads to the proximate zone. Being somewhat removed from the disaster site, but still within, say, an hour to two hours travel time from the area, those most intensely concerned with potential victims will drive to the area to assess the condition of loved ones and render whatever assistance they can. Residents of proximate zones who have less concern for particular individuals tend to volunteer their assistance to hospitals, relief centers, and communication centers that operate in the proximate communities. In the White County, Arkansas, tornado, for example, over 25 per cent of the total adult population of Searcy, Arkansas, a community of about 6,000 persons located a few miles from the tornado-struck area, volunteered or rendered some form of medical assistance during the first night following the tornado. Numerically, this meant that over 1,000 adults out of a total adult population of about 3,800 engaged in some type of help convergence on four medical centers. In addition, approximately 25 per cent of the total adult population in contiguous and proximate areas performed work in one or more of the formal relief centers during the first two weeks following the tornado.[42] These figures quantitatively illustrate a part of the great amount of internal convergence around hospitals and other relief centers so frequently mentioned in disaster reports.[43]

Individuals and voluntary associations in the remote zone are most likely to learn of the disaster through mass media announcements. Help convergence by persons in this zone initially is most likely to take the form of offers of assistance via existing communication channels, rather than actual

---

41. Marks, Fritz, et al., op. cit., I, 125-177.
42. Ibid., 234, 273-275.
43. Raker, Wallace, Rayner, and Eckert, op. cit.; and Bakst, Berg, Foster, and Raker, op. cit.

aid in the form of personal convergence. These offers of assistance may be expected to constitute a significant proportion of the informal communication convergence that occurs as soon as news of the disaster spreads to the outside world. Remarkably soon, however, and often without previous notification, persons in the remote zone begin sending money and material goods into the stricken area. Beginning within twenty-four hours following a disaster and continuing for several weeks or more thereafter, donations of clothing, bedding, household goods, and other equipment, supplies, and money begin arriving on the disaster scene or at relief centers or supply points in the contiguous or proximate zones.

The volume of materiel convergence, like the personal convergence of helpers, is undoubtedly related to distance from the disaster site. Samuel Prince, on the basis of his study of the Halifax disaster of 1917, suggested that a comparative study of disaster would reveal a correlation between the relative amount of aid given and the distance of those who give. He formulated this into the hypothetical proposition that "relief in disaster varies inversely as the square of the cost distance."[44] Although this hypothesis has never received a rigorous test, current disaster findings suggest the general validity of the hypothesis when applied to informal relief aid rendered in domestic disasters. The bulk of the volunteered supplies and materiel tends to be furnished by persons and groups located near the disaster scene or the site of medical and relief operations.[45]

There also seems to be a difference in method of delivery of these volunteered supplies by proximity to the disaster area. Persons living close to the disaster area or the site of disaster operations tend to deliver their supplies in single or small units, oftentimes on foot, whereas organizations and persons supplying goods from the remote zones tend to consolidate individual contributions into truckloads or trainloads for delivery by vehicle.

There are few systematic observations on the motivations of external donors of supplies and money, but the present evidence suggests, again, that the motivations array themselves along the continuum of personal identification and involvement with the victims or the organizations represented in the stricken community or area. Although a considerable proportion of the donations may derive from general motivations of sympathy and charity, it is reasonable to hypothesize that the majority of the donations come from two major sources: (1) individual donors who have friends or relatives in the area

---

44. Samuel H. Prince, Catastrophe and Social Change (New York: Columbia University Press, 1920), 115.

45. Cf. Marks, Fritz, et al., op. cit., III, Appendix B-1, 13-14; Rosow, op. cit., 141-146; and Moore and Crawford, "Waco-San Angelo Disaster Study: First Annual Report," op. cit., sec., "Disasters, Donors, and Donations."

and (2) voluntary organizations and business firms that have contacts or relationships with counterpart or related organizations in the affected area.

The University of Texas investigators analyzed 139 letters and the addresses of 410 envelopes containing donations of money sent to organizations in Waco and San Angelo following the tornado of May, 1953. They found that 79 per cent of the donors were located in the state in which the disaster occurred. The remaining 21 per cent came from thirty-one other states and two foreign countries. An analysis of the thematic content of the letters accompanying donations indicated a predominance of religious themes, apologies for the small size of the gift, sympathy, and identification with the stricken community. Other themes represented were similar experience with disaster, offers of physical aid, restriction on the use of donations, and curiosity. [46]

Voluntary associations and business organizations are perhaps the most influential organizers of outside supply aid. Church denominations which have congregations in the stricken area, national corporations with local business outlets, labor unions, and fraternal and professional organizations which have membership in the disaster area have been noted as donors or transporters of supplies into disaster areas. [47] Since these organizations often collect and transport individual contributions, perhaps the most significant method of instituting control over outside materiel convergence would be through the local outlets of these national or regional organizations. Coordination of the requests for aid and the communication channels of these organizations might enable control authorities to institute the screening or filtering function prior to the dispatch of goods or other forms of assistance.

Although the sheer mass of volunteered supplies is frequently significant in relieving the shortages experienced by the disaster-struck population and the agencies administering relief, it should be noted that this phenomenon of unlimited supply is likely to be characteristic of relatively isolated peacetime disasters in a society producing a surplus of consumer goods. If we think of widespread multiple disasters, such as might occur in thermonuclear bombing of major urban complexes, the volume of volunteered supplies probably would drop to insignificance, as the demands exceeded the available supply of goods or transportation facilities. [48] Wallace describes the belief in unlimited

---

46. Moore and Crawford, ibid., 1-8.

47. Moore and Crawford, ibid., 8-14; and Marks, Fritz, et al., op. cit., I, 136-137, 429-488.

48. For a discussion of some of the more general problems arising from a scarcity of goods and the distortions of pre-war patterns of wealth and status that might occur in the event of widespread thermonuclear bombing of U. S.

supply as the "cornucopia theory," and suggests that it may produce a tendency to think in terms of repair rather than prevention and may produce disaster organizations which are better adapted to excess supply than to inadequate supply. He also points out that the profusion of help probably cannot be counted upon in atomic or hydrogen disasters.[49]

The great cornucopia of consumer goods perhaps also accounts for the relatively small amount of looting or major stealing that is reported in most recent peacetime disasters. The "relief stealer"--or person who identifies himself as a disaster victim in order to secure relief supplies--apparently is a more characteristic exploitative converger in peacetime disasters than the looter or stealer of victims' property.

## The Curious

Curiosity, by its very nature, is excited by unusual circumstances, by events which cannot readily be fitted into or explained by previous experience. Disasters are events which are inherently unusual and dramatic; they excite attention and require investigative activity if they are to be coped with and understood. Viewed in this fashion, the curiosity manifested in disasters is simply an example of the normal human tendency to be attracted by and to inquire into any phenomenon which is strange. Curiosity provides the stimulus to investigate and "structure the field"--to explain and assimilate unusual happenings. Killian advances the proposition that structuring activity is typically a modal response in all disaster zones early in the post-impact period, and points out that many of the problems of social disorganization, such as the movement of large numbers of people towards the impact zone, stem from this tendency to engage in structuring activity.[50]

Curiosity implies a certain type of involvement in an event, typically represented by persons or groups who are somewhat detached from immediate personal danger or overriding concerns for the safety and welfare of other people. Curiosity is rarely, if ever, ascribed to persons who are personally

---

cities, see Jack Hirshleifer, "Some Thoughts on the Social Structure after a Bombing Disaster," World Politics, VIII (January 1956), 206-227. Specific economic effects of hydrogen bombing on a single U. S. city are discussed in Baltimore and the H-Bomb ("Studies in Business and Economics," IX, No. 2 /College Park, Maryland: University of Maryland, Bureau of Business and Economic Research, September 1955/).

49. Wallace, op. cit., 101, 155-159.

50. Lewis M. Killian, "Some Accomplishments and Some Needs in Disaster Study," Journal of Social Issues, X, No. 3 (1954), 68.

*Red Cross Photo*

**PLATE 9**

THE CURIOUS. Crowds of spectators line the banks to view the damage caused by the flood at Vanport, Oregon, on May 30, 1948. The entire war-built city, housing nearly 20,000 people, was destroyed in a matter of minutes when a nearby dike broke.

victimized by disaster or who are acutely anxious over the welfare of other persons during the immediate post-impact period. Rather, it is manifested by persons who have minimal personal concerns or identification with disaster victims. When immediate personal danger and anxiety over the welfare of loved ones have passed, however, curiosity may again manifest itself. Thus, during the early post-impact phase of a disaster, we would normally expect curiosity-motivated forms of behavior to occur initially on the part of persons in the disaster area who are not preoccupied with pressing personal concerns. Later, however, the initial curiosity seekers are likely to be augmented by survivors who were formerly anxious about their own or other's safety and welfare, and by persons who enter the disaster area from outside.

These views of curiosity appear to be confirmed empirically in disaster studies. The NORC study of the White County, Arkansas, tornado indicated that approximately one-third of the impact population at some time during the first six hours following the tornado engaged in behavior which consisted of "standing around" and observing the disaster damage or the relief activities. The evidence also suggests that this behavior was most frequently displayed by persons who had low personal loss involvements. Within an hour or so after impact, the indigenous curiosity seekers were joined by persons from contiguous areas and proximate communities, and by returnees. During the first six hours following the tornado, nearly 50 per cent of the residents of contiguous and proximate zones engaged in this form of structuring activity or curiosity, either in the impact area or at points of medical or relief activity in their own zones. This curiosity-type behavior, of course, in many cases lasted only for a brief time and was often followed by active attempts to assist in the rescue and relief work.[51]

The tendency to describe nearly all convergers as "sightseers," "curiosity seekers," or "spectators" makes it difficult to delineate the process or scope of curiosity convergence. In general, however, the process appears to be similar to that discussed with reference to anxiety and help convergence. That is, the initial curiosity seeking behavior is manifested within the disaster area by those with minimal personal concerns. Shortly after the disaster, these persons are joined by the curious from contiguous and proximate areas, and by the returnees who had temporarily evacuated to these areas.[52]

---

51. Marks, Fritz, et al., op. cit., I, 240. Also see Harry B. Williams, "Communication in Community Disasters" (Unpublished Doctoral dissertation, Department of Sociology, University of North Carolina, 1956), 259-261.

52. Dr. James C. Diggory has suggested that epidemic-type disasters are less likely to attract a large volume of curiosity convergers than other types of disaster because of (1) the fear of contamination and infection, and (2) the fact that with the lack of physical destruction, there is little or nothing to see. (Personal communication, February 25, 1956.)

Spatial distance, however, appears to be a greater determinant of personal curiosity convergence than of personal anxiety or help convergence. Although the anxious and the helpers, especially those who are concerned about particular persons, may overcome great distances in order to move to the disaster area, the curiosity seekers who actually travel to the disaster area are mainly bounded by the outer limits of the proximate zone. Persons in the remote zone generally manifest their curiosity by "converging" on the sources of news in their respective communities (radio and television broadcasts, newspapers and other periodicals, etc.) Thus, people living in places which are more than a few hours travel time from the disaster site are not likely personally to converge on the disaster area. Moreover, the immediate volume of curiosity convergence from the more distant communities in the proximate area (e.g., those 50 to 100 miles away)[53] is likely to be small unless the disaster happens to strike on a weekend or holiday. The "holiday" sightseer, however, normally may be expected to constitute a significant proportion of the total personal convergers on successive weekends or holidays following the disaster.[54] Both the University of Texas and the NORC investigators note that in the tornado disasters which they studied the most serious traffic problems posed by "sightseers" arose on the Sunday following the disaster.[55]

When events that are normally defined as "disasters" become routine or regularized--when they cease to be "news"--they no longer excite curiosity. This is exemplified in the British experience with curiosity convergers

---

53. Although we have arbitrarily used a radius of 100 miles in defining the outer limit of the proximate zone, it is obvious that this limit will vary with differences in the size of the disaster area, the pattern of human settlement, and cultural definitions of "distance." In the Great Plains states, for example, where communities are widely separated spatially, the proximate limits may extend beyond a 100 mile radius. In such areas, persons may drive 200 miles for the same purpose (e.g., to satisfy curiosity) that would impell residents of other areas to travel only 50 miles.

54. Data collected for the authors in the Farmington-Unionville, Connecticut, flood study (see footnote 28), suggest that all types of convergence are likely to increase on weekends following a disaster. Specifically, preliminary tabulations show that, out of a total of 982 external convergers in the sample studied, about 40 per cent arrived during the first week, 22 per cent during the second week, 15 per cent during the third week, 12 per cent during the fourth week, and 5 per cent during the fifth week following the flood. (In 6 per cent of the cases, time of arrival was not specified.) During each of the five weeks studied, the majority of convergers arrived in the disaster area on a weekend.

55. Moore and Crawford, "Waco-San Angelo Disaster Study: First Annual Report," op. cit., sec., "Cities in Crisis," 8-9; and Marks, Fritz, et al., op. cit., I, 240.

during the World War II bombings of British cities. Janis points out that with successive dangerous raids, the bombed population displayed more and more indifference toward air attacks:

> . . . a survey in two target areas (Islington and Southwark) carried out by the Ministry of Home Security showed that by April, 1941, very little notice was taken of an air alert without noise. In London, as well as in other target cities, little concern or interest was shown in bomb damage. Cautions about staying away from unexploded bombs were frequently ignored, and, in general, bombings came to be regarded with a degree of detachment that approached the usual attitude toward peacetime traffic dangers.[56]

A similar lack of curiosity on the part of the local populace was noted in the West Frankfort, Illinois, mine explosion, which killed 119 men. The internal convergence was for the most part confined to the anxious and the helpers; the amount of personal curiosity convergence appeared to be small. The past history of frequent mine accidents and disasters in the community had prepared the population for this kind of disaster and narrowed the range of uncertainty. One miner, for example, said: "They just told us there was an explosion. That was enough right there. In fact, that tells the whole story. It was just a matter of how many."[57]

Current evidence suggests that most curiosity convergence in disasters does not arise from neurotic impulses or "ghoulish glee" in witnessing destruction or suffering[58] but, rather, arises from the need to assimilate happenings which lie outside the viewer's frame of reference or realm of experience, and which may affect his future safety. In this sense, at least, curiosity may be viewed essentially as an adaptive, future-oriented response to disaster. Matte arrives at a similar conclusion on the basis of his observations of the "curious-minded" people who made tours of the bomb damaged areas in British cities. He claims that the facial expressions of people, as they stood in front of damaged buildings, seemed to reflect an emotional

---

56. Janis, op. cit., 111.
57. Marks, Fritz, et al., op. cit., III, Appendix B-3, 68.
58. Descriptions of curiosity seekers as "morbid," "ghoulish," etc., are often made by the victim population and by persons whose work is hampered by the convergence of the curious. Such descriptions represent essentially a "victim perspective" on this form of behavior. Regardless of the needs or motivations of the "sightseers," the behavior appears morbid or inappropriate to the victim population, and it often arouses their bitter resentment, especially after the emergency period has passed. Examples of this resentment may be found in virtually every disaster research report.

"working-through" of air raid experiences, perhaps resulting in increased understanding and acceptance of the realities of the threat. He hypothesizes that viewing the destruction stimulates a gradual realization of the possibilities of one's own death and thereby minimizes the traumatic effects of a sudden confrontation with the realities of air-raid dangers.[59]

Janis, in commenting on this and other evidence, derives these conclusions:

> Among those who were initially inclined to ignore or to deny the existence of danger, the adjustment process described by Matte might be expected to have considerable value as a form of psychological preparation for withstanding the emotional impact of increasingly severe air attacks. Some of the persons who were initially apprehensive also might have benefited from viewing the bomb damage. Numerous observers mention that there was considerable relief among the British when they discovered what the raids were really like. They had expected the attacks to be far more devastating than they actually turned out to be. The satisfaction of curiosity about the destruction produced by a raid is probably one of the ways in which grossly exaggerated expectations and fantasies were brought into line with reality.[60]

If this view of the positive function of curiosity is accepted, it is clear that directing and channeling the activities of the curious, rather than constraining them, should underlie planning and control assumptions. As we shall note in more detail in Chapter IV, it is probable that the volume of personal curiosity convergence in disasters can be reduced considerably by finding "substitute" means of satisfying curiosity needs.

## The Exploiters

Theoretically and logically speaking, disasters provide a wide range of opportunity for exploitation, or the seeking of private gain from public misfortune. In actual fact, however, the extent of exploitation that occurs in disasters is usually grossly exaggerated in popular thinking. Certainly the dire predictions of widespread looting, stealing, profiteering, mob violence, and crime that frequently have been made in the past have rarely, if ever, been fulfilled.

---

59. I. Matte, "Observations of the English in Wartime," Journal of Nervous and Mental Disease, XCVII (1943), 447-463 (also quoted in Janis, op. cit., 155).

60. Janis, op. cit., 155-156.

One of the major bases for these exaggerated notions arises from the uncritical extrapolation of normal perspectives into the changed circumstances produced by disaster. The reasoning, for example, often takes this "normally" logical form: "Disasters destroy and scatter private property, leaving it exposed and easier to steal; hence, the rate of theft will increase." Or, "disasters produce a scarcity of consumer goods; hence, they increase the motivation to steal or gain profit from hoarded supplies." In other words, the normal "selfish" motives that manifest themselves in everyday life are extrapolated without change to the behavior manifested in disasters.[61]

Although disasters increase the opportunities for exploitation, they often reduce the motivation to engage in this form of behavior, at least among the population which directly experiences the disaster effects. Many of the bases for crimes against persons and property are eliminated by widespread disaster. The indiscriminant nature in which many disasters strike means that inequalities of wealth and status are frequently eradicated. Persons who in normal times feel rejected, isolated, or detached from their society feel wanted, needed, and accepted in disasters. Persons who normally have little opportunity for useful, socially-approved forms of activity find the opportunity to take an active role in the community's behalf and, as a consequence, may be elevated to new positions of prestige and public approval.

These "positive" or therapeutic aspects of disasters are frequently overlooked by persons who reason and extrapolate from norms based upon a non-disaster social structure. In fact, however, the general "democratization" of the social structure and dramatic increase in social solidarity which usually accompanies disasters is perhaps one of the most significant factors in preventing many of the forms of behavior that would be expected on the basis of normal, everyday experience. Titmuss points out that the equalization of sacrifice and breakdown of social distinctions was a major factor in maintaining the morale of the British during World War II and apparently were influential in preventing the great increase in mental illness,

---

61. This projection of normal standards of reference into the post-disaster period is a fallacy which pervades much of the past and current literature and thinking about the effects of disaster on human behavior and social organization. This fallacy led the British to engage in highly unrealistic planning for "mass panic," "mass neurosis," and widespread social disorder prior to World War II. Current speculation about the social and individual effects resulting from widespread nuclear bombing is similarly affected by the failure to recognize that disasters produce basic changes in social norms and individual behavior. Failure to appreciate these changes often leads to concentration of attention on imaginary or minor problems.

suicides, and crime that was expected on the basis of pre-war predictions. He notes that, although juvenile delinquency increased, there was generally much less disorderly behavior in the streets and public places than before the war.[62]

Most acts of exploitation require a detachment from or non-sympathetic identification with the population being victimized. They require the "de-personalized" perspective of viewing actual or potential victims as means or instruments for securing goals rather than ends or values in themselves. Or, to state it in psychological terms, exploitation requires ego-detachment rather than ego-involvement in the situation. For this reason, we would expect the exploiters in disaster to have minimal identification with the disaster-struck community or area and minimal personal involvements in the situation. The present evidence on exploitative behavior in disasters is too inadequate to prove this inference, but it suggests that the exploiters are drawn essentially from those who are detached from the newly engendered solidarity of the disaster-struck community. Initially, at least, the exploitative convergers are more likely to be drawn from outside the disaster area rather than from inside it.

In discussing exploitative convergence, we shall distinguish four major types of exploiters: (1) looters, (2) souvenir hunters, (3) relief stealers and (4) profiteers.

Looters

The concept of "looting," in the sense of widespread plundering or sacking, appears to be a somewhat archaic concept when applied to modern disasters. In none of the peacetime disasters studied during recent years has there been a significantly large amount of looting or major theft. Even in World War II bombings, there apparently was much less looting than would be expected in terms of the opportunities for this type of activity. In modern warfare the unorganized, informal types of looting probably are quantitatively insignificant when compared with the formal, government-sanctioned confiscation of patent rights, productive facilities, and other movable or transferable resources belonging to the conquered nation.

The difficulties of detecting actual cases of theft in disasters, of course, are considerable. In explosive-type disasters, there often is no way of determining whether the property lost is a result of the disaster agent itself or human actions. As previously indicated, there is also the difficulty in discriminating the legitimate retrievers or salvagers of property from the

---

62. Titmuss, op. cit.

*INP Photo*

**PLATE 10**

LOOTERS OR RETURNEES? This photo suggests the difficulty encountered in distinguishing looters from legitimate residents who are engaged in salvaging their property. Although the actions of the two men could easily be interpreted as looting behavior, the men are actually a father and son who returned to their wrecked home to sort things and prepare for rebuilding after a tornado.

looters. A further difficulty arises from the variable definitions of "looting." The conceptions of what constitutes lawful and unlawful acts are especially subject to change under disaster conditions. Acts that are normally viewed as thefts become "borrowing" or "midnight requisitions" to persons who are attempting to fulfill immediate and pressing needs posed by the disaster. Granting these difficulties and the inadequacy of present data, it is clear, however, that the number of verified cases of actual looting in recent peacetime disasters, both in the United States and in foreign countries, is small. Diggory and Pepitone point to the relative paucity of looting and theft in their review of the evidence from epidemic-type disasters.[63] NORC, on the basis of eight disaster investigations in various cities throughout the United States, found that the amount of looting was generally small and mainly limited to petty pilfering or souvenir hunting.[64] The Dutch investigators of the 1953 floods report that, although there were numerous rumors of looting in the flood-stricken areas of Holland, not a single verified case came to the attention of law enforcement agencies. They attribute many of the supposed reports of looting to the poor functioning of memory during the first days after the flood, and point out that a number of people who reported thefts later found the items that they had reported stolen.[65] Powell, reviewing the evidence collected in six domestic disasters by the University of Maryland Psychiatric Institute, concludes that "looting earns a vast amount more attention and precaution than its actually observed incidence would merit. More is given away than is stolen."[66]

A number of disaster reports present evidence to indicate that some of the reported cases of looting have been performed by the security personnel who were responsible for guarding the disaster area. Schmideberg reports looting activity on the part of British Civil Defence workers following air raids.[67] The looting of a house by off-duty policemen from another city and their arrest by a State Police officer is reported in the Flint-Beecher tornado by the Michigan State University investigators,[68] and by Rosow.[69] In In the Udall, Kansas, tornado, the only reported case of looting that came to the investigators' attention was the theft of property by two National Guardsmen.[70] In the Waco tornado disaster, there apparently was little looting,

---

63. Diggory and Pepitone, op. cit.
64. Marks, Fritz, et al., op. cit., I, 520.
65. ISONEVO, op. cit., III, 43, 111-112.
66. Powell, op. cit., chap. IV, 25.
67. Quoted in Janis, op. cit., 149.
68. Form, Nosow, Stone, and Westie, "Final Report on the Flint-Beecher Tornado," op. cit., 41.
69. Rosow, op. cit., 394.
70. Robert V. Hamilton, Ross M. Taylor, and George E. Rice, Jr., "A Social Psychological Interpretation of the Udall, Kansas, Tornado" (Unpublished report, University of Wichita, Wichita, Kansas, October 1955), 47-48.

despite the fact that the contents of show windows in jewelry stores were scattered over the sidewalks.[71] Powell reports a National Guard informant in Waco as saying that most of the items which disappeared were in the stores being guarded.[72] The security forces guarding a disaster area, of course, usually have maximal opportunity to engage in looting and minimal emotional involvement in the situation--a fact which logically suggests that their potentiality for looting is much greater than that of the general population.

The process by which a few actual cases of looting can be inflated into an impression of widespread theft is documented in the NORC study of the White County, Arkansas, tornado. Only 9 per cent of the population in the impact areas reported that they had lost property which they "felt" might have been looted. Of this group, however, only 1 per cent reported that the value of the objects believed looted was large. Very few persons (less than 9 per cent) directly observed an act which they interpreted as looting. When queried concerning knowledge of looting to other persons, however, 58 per cent of the impact population and 52 per cent of the population in contiguous and proximate areas reported that they had heard of looting of the property of others. Again, however, only 4 per cent of the persons in impact areas and 2 per cent of those not in impact areas knew of an instance of looting involving their own kin or intimates; the reference in all other cases was to "others in general," and these references tended to cluster around the two or three known cases of major items looted.[73]

While relatively few authenticated reports of actual looting have been discovered by objective research, public law enforcement agencies must, of course, protect against its possibility. Regardless of the objective nature of the threat from looting, disaster-struck populations usually hold the belief that considerable looting follows disaster and they expect the authorities to protect their property. They derive a feeling of security simply from the knowledge that protective forces are "on the job."[74] It seems evident,

---

71. Moore and Crawford, "Waco-San Angelo Disaster Study: First Annual Report," op. cit., sec., "Cities in Crisis," 14.

72. Powell, op. cit., chap. III, 66.

73. Marks, Fritz, et al., op. cit., I, 247-248.

74. Miss Rue Bucher has suggested that, in this sense, guarding against looting may be viewed as primarily a public relations, morale-boosting device, designed to make people feel safer. She notes that if the population views the guarding of their property as inadequate, they may develop feelings of hostility toward protective authorities. (Personal communication, February 19, 1956.) For examples of how disaster-struck populations have viewed the National Guard, State Police, and other protective agencies, see Marks, Fritz, et al., op. cit., I, 251-254; Form, Nosow, Stone, and Westie, "Final

however, that protective agencies have oftentimes given the problem of looting greater attention and higher priority than it deserves in relation to other imperative problems that require solution (e.g., communications, external and internal traffic control).

We have previously noted that the cornucopia of supplies which floods into most disaster-stricken areas in peacetime may be a significant factor in reducing the extent of looting. Although they may no longer be considered such, acts which in normal times are defined as looting may considerably increase when people have to compete for scarce supplies. The evidence from World War II studies is by no means unequivocal on this point, but the USSBS report on German morale concludes that looting was the type of crime most likely to increase following air raids.[75] Janis reviews the fragmentary evidence from British sources, and concludes that it points to a similar tendency.[76] These wartime data, however, as Janis suggests, should not be accepted uncritically. Titmuss notes a general decline in criminal and disruptive activity in Britain.[77] Moreover, the USSBS reports do not indicate what types of activity were defined as "looting" by the German authorities. It apparently includes petty pilfering as well as major theft. There is evidence to indicate that the definitions of looting and enforcement policies varied from time to time during the war and may also have varied considerably from city to city.[78] The USSBS evidence also does not control data on looting for size of city or indicate whether the "increase in looting" represented an absolute increase in theft activity or simply a diversion from one type of theft to another.

## Pilferers or Souvenir Hunters

Although looters are the group most frequently thought of in connection with exploitation in disasters, it is probable that other less dramatic and less detectable forms of exploitation are proportionately more significant. One of these forms is pilfering or souvenir hunting. While police and other law enforcement agencies are guarding against major theft, a significant amount of this activity may be taking place without their awareness. Currently, there are no adequate quantitative data on the extent of pilfering, but the general weight of evidence suggests that this form of activity is more

---

Report on the Flint-Beecher Tornado," op. cit., 53-66; and Moore and Crawford, "Waco-San Angelo Disaster Study: First Annual Report," op. cit., sec., "Movement of Place of Residence of Disaster-affected Families," 30-31.

75. USSBS, op. cit., 88 -89.
76. Janis, op. cit., 149.
77. Titmuss, op. cit.
78. USSBS, op. cit., 89.

prevalent than looting and that the value of hundreds and thousands of small items pilfered may, in fact, total more than the value of goods lost by major theft.[79]

Much of the activity that may be categorized as pilfering is not, in a strict sense, exploitation, since there is no intent to seek private gain or deprive rightful owners of their property. A large share of the activity falls into the category of "souvenir hunting," or the attempt to find some physical object which will encapsulate or symbolize the experience of viewing the disaster and which will offer "proof" that the person "was there." This search for "tokens" or "souvenirs" must be recognized as a prevalent tendency, especially among external convergers who are motivated predominantly by curiosity. The frequency with which merchants and vendors capitalize on this tendency following disasters by the sale of photographs and surviving disaster-scarred objects suggests both the universality of this type of behavior and one of the means by which it can be channeled into non-disruptive forms.

## Relief Stealers

A form of exploitation that is rather consistently encountered by relief agencies and centers is relief stealing. In any large-scale disaster, at least, there will be some persons who claim disaster-victim status in order to obtain relief goods or services. The relief stealers are most likely to be encountered during the emergency or mass care phase of relief work, i.e., before tests of eligibility are instituted for the distribution of relief supplies. The behavior may range from occasional attempts to obtain free meals dispensed from mobile canteens or emergency kitchens[80] to systematic, organized "tours" of the various relief centers to obtain goods for re-sale purposes.[81] Relief stealing is frequently encouraged by the spread of information concerning the "mountains" of clothing and supplies available in relief

---

79. Sir Ernest Rock Carling, comparing the British experience with looting and pilfering during World War II with the statements made here, stated: "Your estimate as to looting and discrimination between it and petty larceny holds for us too. No doubt some buried property when recovered from beneath the debris found its way into the wrong hands, but it did not assume proportions that disturbed the public." (Personal communication, February 1, 1956.)

80. John Balloch, L. R. Braswell, Jeannette F. Rayner, and Lewis M. Killian, "Studies of Military Assistance in Civilian Disaster: England and the United States" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, August 20, 1953), 5.

81. Marks, Fritz, et al., op. cit., I, 245-246.

centers following peacetime disasters.[82] The behavior is also abetted by the many independent and uncoordinated relief distribution centers that are usually set up in or near disaster-struck communities.

## Profiteers

The profiteers--those who attempt to exploit the disaster victims' losses and psychological anxieties for financial gain--is a category of exploiters which is suggested by a number of disaster studies, but on which there is little more than impressionistic data. The category is difficult to define, primarily because it is likely to encompass a wide variety of operations, and because of the fine line which separates "profiteering" from "normal economic adjustments to a scarcity market." It would include salesmen, merchants, craftsmen, and professional men who play upon the fears and anxieties of the victims to achieve sales of their products or services, or grossly raise the price of their goods or services to take advantage of shortages.

The present evidence seems to indicate that the amount of profiteering that occurs during peacetime disasters is relatively small, at least during the immediate post-emergency period. As many disaster investigators point out, perhaps the most significant form of behavior by business and professional persons in the emergency period is not profiteering, but the reverse--the free distribution of supplies and services.[83]

This absence of evidence on major profiteering activity in current disaster reports, however, cannot be accepted as evidence of its absence or insignificance. Recent disaster studies have concentrated attention almost exclusively on the emergency phase of the disaster--the period most likely to be characterized by selflessness and lack of exploitation. The rehabilitation phase of the disaster, when disaster-struck communities are attempting to rebuild and restore their losses, may greatly increase the possibilities of profiteering. During the emergency and immediate post-emergency phase, there frequently is a plethora of emergency goods and services; shortages of critical items are more likely to be manifested during later stages.[84] In

---

82. Ibid.

83. Powell, op. cit., chap. II, 10.

84. In societies characterized by marginal rather than surplus economy, or in areas where large numbers of people are isolated from outside aid, critical shortages may develop during the emergency phase of a disaster. In the Tampico, Mexico, hurricanes and floods of September 1955, for example, De Hoyos notes that at least 75 persons were fined for speculating

general, the evidence from World War II, would seem to indicate that major profiteering or black market operations are likely to increase considerably during wartime.

## Other Forms of Exploitation

The previous discussion, of course, does not exhaust the possible or potential range of exploitative forms of behavior that may be found in disasters. Exploitation may take place for political gain, for status and prestige, as well as for financial reward. A disaster is sometimes used, for example, to create issues or conflicts which are designed to maintain or enhance the power of special interest groups.[85] Moreover, by virtue of the new norms and sensitivities which they develop, disaster-struck communities may interpret a number of normally acceptable forms of behavior as exploitation. Examples may be found in the resentment which is sometimes directed against the behavior of newsmen or photographers who "exploit" the population in order to "get a story," against relief agencies which publicize the event in order to motivate continuing financial contributions, and against investigatory groups whose purpose is unknown or believed to be antithetical to the best interests of the affected populace.[86]

---

with food, clothing, and gasoline during the early post-disaster stages. He states that most of these speculators were small retail businessmen. See Arturo De Hoyos, "The Tampico Disaster" (Unpublished report, Social Research Service, Department of Sociology and Anthropology, Michigan State University, January 1956), and the mimeographed "Addendum" to this report.

85. For a further discussion of this point, see Charles E. Fritz and Harry B. Williams, "The Human Being in Disasters: A Research Perspective," The Annals of the American Academy of Political and Social Science, CCCIX (January 1957), 42-51. For a discussion and analysis of the related problem of blame and resentment in disasters and the process by which disasters become an issue, see Rue Bucher, "Report on the Elizabeth, New Jersey, Plane Crashes: A Study in Blame," in Marks, Fritz, et al., op. cit., III, Appendix B-4, 76-95; and Rue Bucher, "Blame in Disasters: A Study of a Problematic Situation" (Unpublished Master's thesis, Department of Sociology, University of Chicago, December 1954).

86. Cf. Mark J. Nearman, "Reactions of a Civilian Population to Threat of Radioactive Contamination" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, July 20, 1954), 4-5; Marks, Fritz, et al., op. cit., I, 264-281; III, Appendix B-2, 44-45, 56; and Rosow, op. cit., 352-357.

These examples should not be generalized into the statement that outside persons or groups are always objects of resentment in disaster-struck

## Summary

It should be re-emphasized that the types of convergers discussed in the foregoing sections are not, in any fundamental sense, types of persons, but types of roles that all persons potentially may play, depending on their spatial juxtaposition and psychological relationship to the disaster event. In distinguishing the various types, moreover, we have been concerned primarily with the initial or primary motivations which impell convergence behavior. These motivations obviously change as persons acquire new or additional information or as they confront different social and physical conditions. As Kenneth Burke has pointed out, motives are counterparts of the situation; when the situation or social setting changes, the motives also undergo change.[87]

Disaster interviews provide many instances of this shifting and changing pattern of role behavior and motivation.[88] Persons who initially are attracted by curiosity, for example, are often drawn into the helper role when they enter a disaster area. The anxious who have satisfied their immediate concerns for particular persons often turn to work on a more general, community-oriented level of aid to the disaster victims. Similarly, persons who enter a disaster area under official auspices to aid or protect the disaster-struck population may engage in anxiety-motivated convergence when they learn or perceive that their own kin or intimates are victimized by the disaster; or others may turn from help activity to exploitation of the situation for private gain or personal advantage.

The emphasis on initial motivations for convergence and the shifting nature of convergence roles as time progresses should not obscure the persistence and prevalence of these types in disasters. Present evidence suggests that each of the types is present in all disasters in varying proportions

---

communities. Many contrary examples of widespread acceptance of outside groups can be cited in the literature. Disaster research people, for example, have found that disaster-struck populations are unusually cooperative and willing to be interviewed about their experiences, especially when it is made clear that the findings of such research will be used to help other persons who might experience disasters in the future. Cf. Lewis M. Killian, An Introduction to Methodological Problems of Field Studies in Disasters (Committee on Disaster Studies, Report No. 8 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 465, 1956/).

87. Kenneth Burke, Permanence and Change (2d ed.; Los Altos, California: Hermes Publications, 1954); A Grammar of Motives (New York: Prentice-Hall, 1945); and A Rhetoric of Motives (New York: Prentice-Hall, 1950).

88. Powell, op. cit., chap. II, 9-10.

and at various time intervals following the disaster. Moreover, although the particular individuals represented by a given type of converger may shift frequently, the various types tend to persist so long as the needs or opportunities which produce them remain. The anxious converger will continue to be present so long as anyone who is identified with particular persons in the disaster-struck area is uncertain about the safety or whereabouts of these persons; the returnees will continue to converge until most of the evacuees have assessed the condition of their property and, if feasible, resettled on or near their original homesites; and so on.

This persistence of type can be accounted for largely by the "wave" character of convergence. As news of the disaster spreads outward from the epicenter or path of the disaster, persons from successive spatial and intimacy removes respond to similar perceived needs and opportunities by some form of convergence. The form, speed, volume, and persistence of the convergence response will vary in relation to the potency of the needs, the size and spatial juxtaposition of the affected population, the accessibility of communication and transportation networks leading into the disaster area, and the manner in which the needs are handled by the control authorities.

## CHAPTER IV

# METHODS AND TECHNIQUES FOR CONTROLLING CONVERGENCE BEHAVIOR

The general failure to anticipate the problems posed by convergence has meant that in most recent peacetime disasters, the methods and techniques for controlling convergence have resulted from post-disaster improvisations, rather than orderly implementation of pre-disaster plans. In the relatively few instances where problems of convergence have been anticipated, moreover, the plans have failed to recognize the interrelated character of these problems, and hence have been too limited in scope to be effective. Police and other law enforcement agencies, for example, have sometimes carried out effective cordon controls in the immediate disaster environs, but have failed to anticipate the waves of external convergers coming from distant communities or the internal convergence around hospitals and other centers in contiguous or proximate zones. Similarly, hospital administrators may have effective plans for dealing with registration and identification of disaster victims, but have not anticipated the anxiety needs of relatives and friends or the rush of volunteer blood donors that come to the hospital as a result of a public announcement broadcast over local radio stations. Radio stations and other mass communication organizations frequently have plans for general news coverage of disasters, but sometimes fail to recognize the specific informational needs of various segments of their general audience and the conflicting nature of these needs. Even when the different needs of the several audiences are recognized, however, mass media personnel have difficulty in obtaining accurate and authoritative information to transmit to these audiences.

Virtually all the recent examples of convergence control that can be documented in the disaster literature have been oriented toward the manipulation of the convergence process after it has begun, rather than toward the prevention or channeling of the behavior before it is initiated. In the following discussion, we shall review some of these existent methods of control and the alternative plans, methods, and techniques that have been or may be proposed. These will be discussed under two major headings: (1) Information and Communication Policies and Techniques, and (2) Control of Population Movement.

## Information and Communication Policies and Techniques

The most immediate and crucial need in disasters is "speedy, accurate, authoritative information, coordinated and adapted to the specific needs of

various groups concerned with the disaster."[1] The records from recent disasters, however, indicate that this need is rarely, if ever, fulfilled. Although individual instances of speedy and accurate reconnaissance, intelligence, and reporting can be found in the disaster literature, these instances usually are confined to a small segment of the total needs for information. The general picture that emerges from an analysis of numerous disaster reports is a mosaic of formal and informal efforts to reconnoiter and assess the situation, conflicting initial reports, gross ambiguities and inaccuracies in both the word-of-mouth and mass media announcements, and lack of coordination among the various information-gathering, evaluating and disseminating agencies.[2]

Inaccuracies and ambiguities in initial reports from the disaster area are undoubtedly responsible for many of the serious convergence problems that arise in disasters.[3] Much of the initial anxiety-motivated convergence is stimulated by false or ambiguous announcements concerning the scope and extent of the disaster. False announcements or news bulletins over the mass media are especially prone to magnify the problem. A radio announcement which erroneously identified the tornado-struck area in the White County, Arkansas, tornadoes is credited with being the major factor in clogging the highways, overloading telephone and telegraph lines, and causing mis-shipment of supplies.[4] The creation of rumors and anxiety by false information broadcast over the radio is also mentioned in the Holland flood disaster of 1953.[5]

---

1. Eli S. Marks, Charles E. Fritz, et al., "Human Reactions in Disaster Situations" (Unpublished report, National Opinion Research Center, University of Chicago, June 1954), I, 517.

2. Ibid., I, 515-519; Irving Rosow, "A Comparative Study of Human Relations and Communications in Disaster" (Unpublished MS, Committee on Disaster Studies, National Academy of Sciences-National Research Council, 1953); Harry E. Moore, Fred Crawford, et al., "Waco-San Angelo Disaster Study: Report of Second Year's Work" (Unpublished report, Department of Sociology, University of Texas, 1955), sec., "Mass Communication Agencies in a Disaster Situation."

3. Mr. David Brinkley, National Broadcasting Company news reporter and analyst, states that in 18 years of gathering and disseminating news, he has never seen a first report from disaster areas that proved accurate; all initial reports have been exaggerated or garbled. (Personal communication, February 16, 1956).

4. Marks, Fritz, et al., op. cit., I, 281.

5. Instituut voor Sociaal Onderzoek van het Nederlandse Volk (ISONEVO), Studies in Holland Flood Disaster 1953 (Washington, D. C.: National Academy of Sciences-National Research Council, Committee on Disaster Studies, 1955), I, 63.

Falsity of disaster information is perhaps a less frequent stimulator of convergence than ambiguity of information.[6] The information communicated may be completely true, but the content is often too ambiguous for the various audiences who are responding to it. The informational requirements in disasters are highly specific requirements, and the information that may be sufficient for one audience may be inadequate or disruptive for another audience.[7] People who are distantly removed from a disaster site and who have no identifications with the struck community may be satisfied with a general news announcement or summary of casualties. For many persons, however, this information is simply an anxiety-stimulator. They want to know specifically, what area was struck, who was killed or injured, and who is safe. If they cannot gain this information in the area in which they are located, they will make efforts to converge on the disaster area, by the use of telephone, telegraph, or personal movement. Highly dramatic or sensational accounts of disaster are also anxiety and curiosity stimulators. Dramatic radio reporting is credited as an important factor in the heavy traffic congestion and delay of emergency vehicles in the Brighton, New York, disaster.[8] A "flash" report by a well-known radio commentator is mentioned by Powell as a major contributor to the heavy invasion of the disaster area in an explosion and fire in Philadelphia.[9] Similar examples of the adverse effects of early radio and television announcements can be cited in many major accidents and disasters.[10]

---

6. Cf. Harry B. Williams, "Communication in Disaster" (Paper presented at Fiftieth Annual Meeting, American Sociological Society, Washington, D. C., August 31-September 2, 1955).

7. Marks, Fritz, et al., op. cit., I, 515-519.

8. Ibid.

9. John Walker Powell, "An Introduction to the Natural History of Disaster" (Unpublished final report, Disaster Research Project, Psychiatric Institute, University of Maryland Medical School, June 30, 1954), chap. III, 15.

10. The commonality of these effects is illustrated in the following two newspaper accounts:

(1) A fire in the Arundel Park Auditorium, south of Baltimore, Maryland, on January 29, 1956. Approximately 1,000 persons were in attendance at an oyster roast and dance. The blaze killed 10 persons and injured over 200 others: "News flashes on the fire brought a crowd of several thousand curiosity-seekers who jammed Belle Grove Road and slowed the ambulances fighting their way out. . . Fire equipment arriving to take part in the battle to control the flames had to move slowly through the crowd." Baltimore Evening Sun, January 30, 1956.

(2) The crash of an Air Force transport plane near West Palm Beach, Florida, on August 21, 1956: "Police Chief R. W. Milburn said yesterday

Use of the mass media as a device for requesting supplies and services apparently has caused much of the internal convergence around hospitals and communication and relief centers. These requests are usually effective in obtaining the needed supplies, but they greatly increase the volume of population movement and congestion in areas vitally requiring freedom of access and movement. An additional factor in increasing internal convergence is the failure to provide a central clearinghouse of public information. A tremendous amount of movement, both personal and informational, occurs in the disaster area, and in contiguous and proximate zones as persons move or telephone from site to site in search of relatives and friends or in search of a place where they can volunteer their services and perform a useful task.

These and other considerations make it clear that an initial attack on the problems of convergence requires the development of a systematic policy and program for handling information and communications in disasters.[11] The general structure of such a program, as well as some specific aspects of its content, is suggested by a number of disaster investigators and is reviewed in the following sections.

## Organization and Training of Information and Communication Corps

The very great dependence of modern societies and communities on a complex network of technical facilities of communication is both their major strength and their greatest potential weakness. In disasters, the "Achilles

---

he would seek some method of delaying the reporting of disastrous plane crashes by radio and television stations. Fast reporting of Tuesday night's crash of an Air Force transport plane that killed three men caused thousands of persons to rush to the scene, creating a traffic jam that delayed ambulances and fire trucks. Milburn said the crowd was the 'worst I have ever seen.' He indicated he might appeal to the stations to hold up reporting such news for a few minutes while relief vehicles reach the scene. The police chief also said he would confer with . . . /the/ commander of Palm Beach Air Force Base, regarding ways to delay the reports." Associated Press dispatch, West Palm Beach, Florida, August 23, 1956.

The suggestion for delaying mass media announcements, made in the preceding account, is discussed under the concept of "lead time" in a subsequent section ("Development of Uniform Code of Disaster Reporting by the Mass News Media") of this chapter.

11. For a systematic theoretical treatment of the problem of communication in disaster, see Harry B. Williams, "Communication in Community Disasters" (Unpublished Doctoral dissertation, Department of Sociology, University of North Carolina, 1956).

*AP Photo*

**PLATE 11**

SOCIAL DISORGANIZATION. This photo shows the dock area in Texas City, Texas, following the explosions of the S. S. "Grandcamp" and S. S. "Highflyer" on April 16-17, 1947. Note the variety of behavior and apparent lack of coordination in the actions of the people. To an outside observer the behavior of persons in disaster-stricken areas is likely to appear irrational, chaotic, and confused. This impression derives from the heterogeneity and lack of familiar pattern in the action that he sees. Despite general social disorganization, however, many individuals and small groups work in disaster areas with purpose and considerable organization.

heel" is clearly revealed. When the facilities of communication are destroyed, the bases for maintaining concerted action and effective social organization over a broad social field are also destroyed or severely curtailed. The resulting "confusion" and disorganization so frequently reported in disaster areas are often erroneously equated with individual or personality disorganization. As Fritz and Marks point out, however:

> It is not the irrationality or uncontrolled nature of individual behavior that raises the major control problems in disasters; rather it is the lack of coordination among the large number of persons acting on the basis of different (and oftentimes conflicting) personal definitions of the situation. [12]

In effect, what occurs in disasters is a reduction of size in the unit of effective communication and action. Individuals, families, and other small groups usually do act adaptively in taking protective and ameliorative action in the post-impact period, but the separate and independent actions of each of these small units often overlap or conflict with one another, creating a total picture of confusion to an outside observer. What the observer is witnessing is disorganization on a societal or community level, but not necessarily disorganization on the small group or individual level.

The breakdown or destruction of technical facilities of communication places a heavy premium on the organization and development of more primitive methods of reconnaissance and communication. In view of past peacetime disaster experience and future wartime possibilities, the most realistic assumption for planning communication policies within and near a disaster-struck area is the total destruction or non-availability of communication equipment and facilities during the initial emergency period; and, therefore, the necessity of relying solely on direct personal observation, couriers, and the face-to-face, verbal communication of messages. Loud speaker and emergency radio equipment from outside generally arrive too late or are available to too small a segment of the disaster-struck population to enable the early reconstitution of concerted behavior on a community or wider social level. [13]

---

12. Charles E. Fritz and Eli S. Marks, "The NORC Studies of Human Behavior in Disaster," Journal of Social Issues, X, No. 3 (1954), 41.

13. In this and subsequent paragraphs we are simply calling attention to the fact that either the technical facilities of communication or a planned network of human communicators is a prerequisite for maintaining communication over a broad social field. We do not wish to suggest that the breakdown or destruction of technical facilities constitutes the sole explanation for communication problems and failures in disaster. Even when the

On the basis of this assumption, and its experience in studying eight domestic disasters, NORC recommends that a corps of persons in every community be pre-designated as informational specialists and given special training in speedy and accurate information gathering in the area for which they are responsible. They point out that this corps should be available immediately to set up headquarters and collect information from various sources, direct the casualties to appropriate locations, compile data on the persons dead, injured, and safe, provide information to the organized rescue, medical, mortuary, law enforcement, and relief forces, coordinate this information in their own area, and check and clear information for dissemination to other areas. Provisions for alternate selection of a headquarters site in the event of destruction to the primary site and alternate personnel for handling information problems when primary personnel are incapacitated are also recommended.

According to this plan, persons who possess emergency communication equipment ("Ham" radio operators, owners of loud speaker equipment, etc.) and those who operate communication facilities at fixed installations (radio stations, telephone switchboards, newspapers, and other printing establishments) would be integrated into this corps and provided with the complementary personnel (e. g., couriers and clerks) needed to perform their communication tasks efficiently. [14]

The advantages of using local persons as basic units in a planned information and communication network are obvious, but the frequency with which they have been ignored by formal control and relief agencies suggest that they merit emphasis and repetition. First, by virtue of being in or close to the disaster scene, they are in a position to make the immediate reconnaissance so necessary for effective rescue and control actions. Second, their familiarity with the local residents and the area's facilities and resources increases the speed and efficiency with which the needed

---

technical facilities are adequate they may be inadequately used. As both Rosow and Williams have pointed out, technicians tend to take a "gadgeteering" approach to the problem of communication, by assuming that it can be solved by adding or improving communication equipment or facilities. The equally relevant questions of how, by whom, and for what purposes the technical facilities will be used tend to be overlooked. For further discussion of this topic, see Harry B. Williams, "Communication in Community Disasters," op. cit., 332-333; and Irving Rosow, "Public Authorities in Two Tornadoes" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, November 1954), 386-388.

14. Marks, Fritz, et al., op. cit., I, 515-519.

information can be gathered and evaluated.[15] This familiarity also places them in the most strategic position to screen and identify the various types of convergers who appear on the scene. Many of the problems of identification can be solved most readily by having local informational specialists at the points of ingress and egress from the disaster area and at information and relief centers in contiguous and proximate zones. The failure of law enforcement agencies to include local personnel in developing criteria for admission or exclusion, and in actually assisting in the screening of the convergers has been noted as one of the major sources of conflict in several disasters.[16]

The need for a total inventory of the condition and location of the population in the stricken area, both dead and survivors, injured and uninjured, as a solution for anxiety convergence is suggested in a number of disaster reports.[17] The anxious converger, as we have previously noted, usually is not satisfied until he has established direct contact with the person with whom he is concerned. Young, in his study of the Canvey Island flood in England, notes that the sound psychological principle of evacuation is "keep the family together," rather than the old principle of "women and children first."[18] Similarly, most recent disaster investigators probably would agree that the most effective solution for anxiety arising out of post-disaster separation is: "Re-unite the family and inform the kin as quickly as possible."

Recent disaster studies have shown, however, that the difficulties of establishing family re-union and informing more distant kin are greatly complicated by lack of planning and coordination. The dead and injured often have no record of identity on their person when found. Family members are frequently separated in the process of rescue and taken to separate medical centers for treatment. Families who evacuate the disaster area privately (and this constitutes the majority in most disasters), usually fail to leave a record of their destination. Most persons who safely survive the disaster fail to anticipate the large number of persons who will make active

---

15. Ibid.; and William H. Form, Sigmund Nosow, Gregory P. Stone, and Charles M. Westie, "Final Report on the Flint-Beecher Tornado" (Unpublished report, Social Research Service, Continuing Education Service, Michigan State College, 1954), 20.

16. Irving Rosow, "Public Authorities in Two Tornadoes," op. cit., 217-222; and Marks, Fritz, et al., op. cit., I, 241.

17. Ibid., I, 515-519; and Form, Nosow, Stone, and Westie, loc. cit.

18. Michael Young, "The Role of the Extended Family in a Disaster," Human Relations, III, No. 3 (1954), 383-391.

inquiries concerning their welfare.[19] In many cases the addresses and telephone numbers of relatives and friends are destroyed and cannot be recalled. Moreover, the numerous separate agencies which inventory their clients often fail to coordinate their inquiry and registration procedures and information, and thus encourage the "endless" search of the anxious from one agency and place to another.

The organization of the local informational corps suggested here would recognize the need for a total inventory of the affected population. The corps would be organized to cover every section of the disaster-affected area, each point of ingress and egress from the area, and all major communication, control, medical, and relief centers in the contiguous and proximate zones. It would also recognize that convergence arises too quickly and in too great volume to be handled effectively by outside control or law enforcement agencies; and that most immediate problems of convergence can be solved by providing accurate information and positive guidance rather than by using physical constraint or other forms of negative sanction.

Some of the specific aspects of the selection, training, and organization of this corps are suggested in a number of disaster reports. Familiarity with a given area or sub-group of the population and with communication skills would be important factors in recruiting the membership.[20] There

---

19. The element of "surprise" over the number and remote relationship of people who manifest concern over their welfare is a common theme in interviews with disaster survivors. This surprise is essentially a product of the different types of information available to persons in the impact area versus those who are outside. Persons in or near the disaster scene make careful distinctions in who was affected and who was not, who had serious losses and deprivations, and who did not. This information is often not available to the outsider. He frequently is operating on the basis of the undifferentiated information that "Area X has been struck by disaster." Thus the disaster survivors fail to anticipate the welfare inquiries of outsiders because their information is much more specific and differentiated, whereas the outsiders' information is ambiguous and undifferentiated. It might also be noted that this is one of the major factors which accounts for the excess of incoming over outgoing messages during the first few days following a disaster. (See discussion of "Informational Convergence" in Chapter II.)

20. Mr. E. L. Quarantelli has suggested that grade school and high school teachers comprise a group which has the requisite familiarity with community resources and the local population, as well as an already-developed set of communicational skills; thus they might well be used to form the nucleus of the informational corps proposed here. He also points to the following additional advantages in using teachers as information and communication specialists: (1) They have had experience in dealing with the public and

would be a need to have more than a geographic representation of the population. Membership would include representatives of all the major voluntary associations (churches, fraternal and professional organizations, etc.) and of the informal social structure of the community. Special emphasis would be placed on securing representation of minority groups, foreign language groups, and other groups which are often isolated from the dominant channels of communication.[21]

The training of these specialists would emphasize the common problems of accurate observation and reporting under stressful conditions--e.g., the tendency to associate disaster signs with familiar and normal events, to focalize perception, to particularize and underestimate the extensiveness of the destruction,[22] to be traumatized by the sights of vast destruction and exposure to large numbers of dead and injured,[23] and to experience serious conflicts between their intimate and their formal responsibilities.[24] Special

---

usually are viewed by the public as responsible individuals, people who can be trusted. (2) Many of them have had previous experience in working together, which would facilitate habits of cooperation in training for this role. (3) There usually are a large number of them available in any community and they normally are dispersed throughout the community; which would mean that proportionately less of them would be lost in a disaster than most other occupational groups. (4) Finally, unlike other groups that might have the requisite background or skills (e.g., clergymen; radio, television, newspaper personnel), they have no established or expected disaster roles; thus in the event of disaster they would not have to make a difficult choice between two equally crucial jobs. A major disadvantage in using teachers--the fact that many of them are not available during the summer months--probably could be handled by the use of alternate personnel. (Personal communication, February 20, 1956).

21. For an example of ineffective communication with the Negro population during a Civil Defense training exercise and a discussion of the implications of such communication failures for local Civil Defense organization, see T. Ktsanes, F. E. La Violette, J. H. Rohrer, et al., "Community Structure, Organizational Structure, and Citizen Participation in Community-Wide Activities" (Unpublished report, Urban Life Research Institute, Tulane University, November 1955), 53-69, 118.

22. See Marks, Fritz, et al., op. cit., I, 502-503; and Irving L. Janis Air War and Emotional Stress (New York: McGraw Hill Book Co., 1951), 4-21, 41-42.

23. Janis, loc. cit.; and Fritz and Marks, "The NORC Studies of Human Behavior in Disaster," op. cit., 38-41.

24. Lewis M. Killian, "The Significance of Multiple-Group Membership in Disaster," American Journal of Sociology, LVII, No. 4 (January 1952), 309-314; and Marks, Fritz, et al., op. cit., III, Appendix B-1, 11-13.

attention would have to be given to innoculating this corps against the compulsion to help persons in their immediate surroundings rather than to fulfill their more general community-oriented task of gathering information that will enable the organized response to ameliorative needs.[25] The needs for information are so imperative that the corps cannot be diverted from this task to engage actively in the rescue and relief tasks. Such tasks can best be handled by similarly-organized local rescue and relief units.[26]

It must be recognized, of course, that the need for systematic reconnaissance and information gathering of the type outlined here is not so obvious to the general populace as those activities which bear directly on rescue and relief. In view of the imperative needs for help, information gathering tasks are usually relegated to a low order of priority. Hence, it may be necessary to develop public sanction by a program of education which would emphasize the crucial role of informational needs in disaster.

The effectiveness of this informational corps is dependent not only on the accuracy and speed with which primary information is gathered, but also on the manner and speed in which it is collated, evaluated, and cleared for dissemination to the appropriate receivers. The need for a central control point or information clearing house to collate, evaluate, and disseminate all in-coming intelligence is repeatedly emphasized by many disaster investigators.[27] A central information and intelligence unit is the obvious capstone for any coordinated plan for handling disaster information and communication. Special attention needs to be devoted to the organization and operation of such units located in or near the disaster site.[28]

---

25. For a discussion of this point and other factors influencing individual performance of trained personnel in disasters, see Harry B. Williams and Jeannette F. Rayner, "Emergency Medical Services in Disaster," Medical Annals of the District of Columbia, XXV, No. 12 (December 1956), 655-662. Although the authors are concerned primarily with medical personnel in this article, their discussion of the factors influencing role performance is equally applicable to informational specialists.

26. Marks, Fritz, et al., op. cit., I, 508-509.

27. For examples, see Douglas Courtney, John Balloch, Harvey Ludwig, and Elizabeth Bowman, "Operation Tulip: A Study of Military Assistance in the Netherlands Flood Disaster" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, June 21, 1954 /Limited Distribution/), 44-45; Rosow, "A Comparative Study of Human Relations and Communications in Disaster," op. cit., 161; and Marks, Fritz, et al., op. cit., III, Appendix B-2, 55-56.

28. The Federal Civil Defense Administration has national and regional control centers through which coordination of the activities of all Federal agencies that provide aid and recovery in disaster situations is effected.

Dispersal and Decentralization of Emergency Information Centers

One of the obvious principles useful for guiding convergence control policies is the diversion of convergence from the disaster area and from nearby rescue and relief centers by inducing and encouraging it in non-affected areas--areas where the communication facilities remain intact. This principle is applicable to the control of convergence originating in remote zones, as well as convergence from contiguous and proximate zones.

We previously have noted the national character of convergence even in limited, one-community disasters. The anxious and help-motivated persons throughout the country usually attempt to establish direct contact with persons or agencies in or near the disaster scene. Much of this convergence from remote zones can be attributed to the absence of specific and detailed information concerning the geographic scope of the disaster and the persons directly affected. If such information were immediately available in dispersed emergency information centers throughout the country, and this fact was well known to the populace, it is likely that the volume of informational, personal, and materiel convergence on the disaster area could be reduced materially or, at least, anticipated and given direction.

---

The American National Red Cross also has a similar system of national and regional communication and control. However, we are concerned here primarily with the organization and operation of control centers at the local or field operational level, since this is an area which apparently has not received the detailed attention and planning that it deserves. The effectiveness of any regional or national system of disaster control is dependent upon the accuracy and speed with which information is gathered, coordinated, evaluated, and transmitted from the local or city level. Errors and biases at this primary level of information gathering and interpretation are likely to cause serious decision-making errors in any regional or national system of disaster control and amelioration. For a further discussion of this point as well as other communication and human relations problems involved in operating a central emergency operations unit, see Charles E. Fritz, Donald N. Michael, and Harry B. Williams, "Operation Alert 1955: Observations and Comments on Human Factors at 'Low Point'" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, 1955 /Limited Distribution/); and Harry B. Williams and Donald Michael, "Observations and Comments on the Function of Federal Civil Defense Communication and Control Centers in Operation Alert" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, 1954 /For Official Use Only/).

Under this plan, the central control or information center located in or near the disaster area would serve as the nerve center not only for the directly affected populace, but also for persons residing in remote zones, by simultaneously releasing detailed information to the emergency centers throughout the nation. Thus when a person residing in a distant city learned that a disaster had struck a city where he was concerned with kin or intimates, he could communicate with his local emergency information center and receive the latest information available in the disaster-struck area or initiate an inquiry, if the information he desired was not available. As we shall note in the following section, such centers might also take an active role in notifying relevant persons and agencies in the remote zone.

## Emergency Registration and Automatic Notification Procedures

There are two basic and somewhat antithetical philosophies which have guided ameliorative and restorative efforts in past disasters. The first might be described as the passive philosophy of the "come and get it if you need it" type. The other is an active or aggressive policy of the "here it is, take what you need" type. Although both of these philosophies have merit, it is clear from a number of disaster studies that agencies which actively canvass the needs of a disaster-struck population and directly deliver aid in accordance with these needs often have gained wider acceptance of their services and a more favorable public response than those which require the victims to seek aid of their own accord.[29] It is probable that much of the informal aid rendered in disasters results from resistance to initiating requests for aid from public or official sources, rather than resistance to public aid as such.

A similar active policy with regard to information and communication in disasters should be given critical consideration. In several disasters, it has been noted that word-of-mouth reports are the dominant means of communication used by the populace, and that the extensive network of informal communications reflects needs which are not covered adequately by the mass news media or by the formal agencies of control.[30]

Potentially there are several steps that could be taken to reduce the amount of informal communication and secure greater control over population movement. One would be the establishment of automatic notification

---

29. For examples, see Marks, Fritz, et al., op. cit., I, 521-524; and Moore, Crawford, et al., op. cit.

30. Marks, Fritz, et al., op. cit., I, 285-290; and Rosow, "Public Authorities in Two Tornadoes," op. cit., 125-139, 200-205.

procedures for kin and intimates of disaster victims, similar to those used in the armed services. This, of course, would require pre-disaster canvassing of the population and the maintenance of up-to-date registers of emergency addresses.[31] The actual notification operations could be handled by the emergency information centers discussed in the previous section. Similarly, in the post-disaster period, the active canvassing of the population to determine informational needs, and the transmittal of both individual messages and public information designed to meet these needs probably would reduce the amount of false or misleading information that usually circulates during the post-disaster period.

Present disaster planning efforts apparently are not adequately taking into account these informal and public needs for information. Current communications doctrine is often based on the uncritical assumption that all operational messages stemming from official sources should receive priority over informal communication needs.[32] Although certain kinds of official operational messages (e.g., requests for rescue forces and first-aid personnel) obviously should be given top priority, it would seem that the prompt restoration of order following disasters requires that public information be given priority over many types of internal, organizational communication. The materials presented in this report suggest that many of the informal information and communication needs are more imperative than those which currently originate from organizational sources, and that a sound information policy must recognize these needs and take them into account in preparing operational plans.[33]

---

31. Marks, Fritz, et al., op. cit., I, 517-518.

32. See National Communications Priorities ("Federal Civil Defense Administration Technical Bulletin," No. TB-4-3 /Washington, D. C.: U. S. Government Printing Office, September 1955/).

33. FCDA information and registration policies and procedures are described in United States Civil Defense: Registration and Information Services ("Federal Civil Defense Administration Technical Manual," No. TM-12-1 /Washington, D. C.: U. S. Government Printing Office, May 1954/). American National Red Cross plans and techniques for handling public welfare inquiries are outlined in Disaster Manual--For Chapters ("American Red Cross document," No. ARC 209 /Washington, D. C.: American National Red Cross, January 1955/). For an instructive account of the operation of a centralized casualty information and registration office in an actual disaster and a series of recommendations based upon this experience, see Eleanor S. Washburn, "Lessons of the Cocoanut Grove Fire," Survey Midmonthly, LXXIX (February 1943), 46-48.

## Development of Uniform Code of Disaster Reporting by the Mass News Media

The methods of handling and reporting disasters by the mass media of communication have varied over a wide spectrum from the highly sensational, dramatic, false, and distorted at one end to the sane, verified, factual, and complete at the other. In the same disaster the public oftentimes receives false, conflicting, or incongruent information and instructions simultaneously from the different news media or at different times from the same medium. Representatives of the mass media themselves often have no clear pre-disaster conception of the proper function of their media in handling disaster information; and, in the face of actual disaster conditions, they improvise or make on-the-spot decisions which prove detrimental to the efficient handling of disaster relief and the restoration of public order. These observations, together with those presented in the previous discussion, strongly suggest the need for developing a uniform code of disaster reporting and news dissemination which would be clearly understood by both the representatives of the mass media and the general public. Such a code would be extremely useful in handling public information in isolated peacetime disasters; it becomes imperative in the event of wartime enemy attack.

This code must recognize that news transmitted over the mass media is often accepted and believed by the populace because it is interpreted as "official,"[34] and also that different segments of a mass audience need different kinds of information. The information pertinent and useful to one segment may be disruptive and harmful to another.[35] Particular attention needs to be given to the specificity of information required by persons who have loved ones in the announced disaster area. The referral of these anxious persons to emergency information centers in their own community would provide one solution to the problem. In a coordinated information program, detailed information would be released to these centers simultaneously with general news announcements.

The mass media themselves, however, can contribute significantly to the reduction of anxiety by clearly delineating the affected population or area and by limiting their coverage to carefully-verified information.[36] The

---

34. Hadley Cantril, Hazel Gaudet, and Herta Hertzog, The Invasion from Mars (Princeton: Princeton University Press, 1940).

35. See Leonard Logan, Lewis M. Killian, and Wyatt Marrs, A Study of the Effect of Catastrophe on Social Disorganization ("Technical Memorandum," No. ORO-T-194 /Chevy Chase, Maryland: Operations Research Office, July 22, 1952/); and Marks, Fritz, et al., op. cit., I, 515.

36. For an example of the skillful use of a local radio station in alleviating public anxiety and in furnishing carefully-verified information to the local

telecast of maps showing precisely the area affected is one device that would reduce much of the unnecessary convergence produced by the ambiguous-type announcement that "City X has been struck." Similarly, the use of conducted TV "tours" through the disaster-struck community and carefully-prepared documentary films and radio programs might contribute to a reduction in the extensiveness of curiosity convergence. Emphasis in this coverage should fall not on the unique and the dramatic, but on the representative and common experiences of persons who were directly confronted by the disaster--experiences that most of the viewers, listeners, or readers might face in a repetition of the disaster.[37] The aim, in other words, would be to provide a representative structure of the event within which persons of many different social characteristics could make individual identifications.

The early "flash" type bulletins issued by the mass media (especially by radio and television stations) while a disaster is in progress or while critical emergency work is under way greatly complicate organized rescue, fire-fighting, and relief efforts. If organized disaster forces are to operate efficiently, they require "lead time" over the spontaneous convergence of people and messages toward the disaster area. One of the most effective ways of securing such lead time would be to delay public announcements of the disaster until the organized units have had an opportunity to arrive on the scene and carry out the most essential and imperative tasks.[38] The possibility of developing this type of coordination between the broadcasting media and official disaster agencies should receive further consideration.

These and similar problems of public information in disasters emphasize the crucial need to include representatives of the press, radio, television, and other mass media of communication in the development and implementation of disaster plans. Failures of recognition and acceptance of

---

populace, see Marks, Fritz, et al., op. cit., III, Appendix B-3, 64-65. A detailed study of the techniques of information-handling used in disasters by local radio stations, television stations, and newspapers would be useful in formulating the operational aspects of the code of disaster reporting and news dissemination suggested here.

37. For a summary of some of the typical and representative behavioral responses to disaster revealed by recent disaster research studies, see Charles E. Fritz and Harry B. Williams, "The Human Being in Disasters: A Research Perspective," The Annals of the American Academy of Political and Social Science, CCCIX (January 1957), 42-51.

38. This recommendation has been made from time to time by various disaster personnel. For example, see the news dispatch quoted in footnote 10, this chapter. The authors are indebted to Dr. John W. Powell for a number of comments and illustrations relating to this point. (Personal communication, February 1, 1956.)

their role in past disasters have sometimes isolated newsmen from the accurate or authoritative sources of information.[39] This isolation, in turn, has tended to increase the possibility of the dissemination of inaccurate, distorted, or uncoordinated information to the public. As the ISONEVO investigators of the Holland floods conclude: "In a time of crisis, it appears that a coordinated news service is a condition sine qua non."[40] This conclusion has led another group of investigators to recommend that "a special section of any disaster planning ought to be devoted to the care of the press."[41] The further suggestion presented here is that representatives of these media be brought together to develop a code of disaster reporting and news dissemination which will protect freedom of the press and the right of a wider audience to know the facts and, at the same time, prevent or minimize the problems discussed in this report.

## The Control of Population Movement

We turn now to a consideration of some of the more direct measures of manipulating population movement in disasters. Control authorities and law enforcement agencies have coped with the problem of movement in a variety of ways. A review of the measures used in recent disasters, however, indicates that there has been little or no recognition of the interrelated character of convergence problems and that many of the techniques used have been predicated upon inadequate, erroneous, or outmoded conceptions. Specifically, the following general observations emerge from a critical examination of these measures:

1. The predominant philosophy guiding security and law enforcement agencies emphasizes restriction or restraint of movement.

---

39. Mr. David Brinkley has stated that one of the "running sores" in the news business stems from the tendency of police and military authorities "to rope off the area, high handedly keep everyone out, clean it up as far as possible, and then and only then offer information on exactly what has happened to whom." He expresses the belief that the accuracy of public information concerning disasters would be greatly improved if accredited news reporters were given prompt access to disaster areas and the primary sources of information. (Personal communication, February 16, 1956.)

40. ISONEVO, op. cit., I, 58.

41. Courtney, Balloch, Ludwig, and Bowman, op. cit., 49.

*Red Cross Photo*

**PLATE 12**

SYMBOL OF HELP OR RESTRAINT? A National Guardsman stands watch over damaged homes and business establishments in Southport, North Carolina, following Hurricane Hazel, October, 1954. To people within a disaster area the National Guard and police forces usually appear as protectors. To persons on the outside who wish to return to the disaster site to salvage property, check on missing loved ones, help stricken friends, or view the damage, however, they are often viewed as blocks to the fulfillment of their immediate, personal needs.

2. The control measures used are often based upon fallacious assumptions concerning the source of control problems and the nature of human responses to disaster.

3. The techniques which have proved successful in routine, non-disaster law enforcement situations are often applied uncritically to disaster situations.

4. There is a general tendency for governmental and control officials to overestimate their ability to control the movement of population in disasters.

The security authorities responsible for control or maintenance of orderly social processes quite generally have instituted methods that are oriented almost exclusively towards constriction or restraint. This is perhaps understandable in view of the quasi-military nature of their organizations and the fact that their normal day-to-day experience is limited mainly to contacts with criminals, offenders, and suspects--groups regarded as threatening to social organization and requiring firm control.[42] Nevertheless, this orientation is distinctly nonfunctional in meeting the needs posed by disaster. The human needs entering into convergence behavior cannot be disposed of by indiscriminant use of restraint, constriction, or suppression. To "dam" these needs means simply that their satisfaction will be achieved by resort to unofficial, "subterranean" channels. Even though the needs outlined in this report cannot be met in their entirety at all times, a much more rational and enlightened approach to control problems is not only desirable but indispensable for efficient disaster recovery.

The projection of normal, day-to-day law enforcement experience into the disaster situation probably accounts for many of the fallacious conceptions which guide control measures in disasters. There are the common beliefs, for example, that crowds in disasters will engage in "unruly" and "unlawful" behavior, and that there will be widespread looting. The empirical evidence from numerous studies discredits these beliefs. It is difficult to find a single, clear-cut instance of an unruly or unlawful crowd either in recent domestic disasters or in World War II bombing disasters.[43] More-

---

42. Cf. William A. Westley, "Violence and the Police," American Journal of Sociology, LIX (1955), 34-41; and "The Police: A Sociological Study of Law, Custom, and Morality" (Unpublished Doctoral dissertation, Department of Sociology, University of Chicago, 1951). Also see Rosow, "Public Authorities in Two Tornadoes," op. cit., 479 ff.

43. Cf. Eli S. Marks and Charles E. Fritz, "Comments on 'Questions for Discussion'--FCDA Briefing Session on Research Problems, for Committee

over, as we noted previously, the extensiveness of looting activity is greatly exaggerated in popular thinking and receives much more attention from control authorities than it deserves from a review of the objective evidence. In general, the major problem in disasters is not the unruliness and disorderliness of crowds, but the fact that their size is so large that they cannot be directed with the ordinary security forces available.

The activities of security forces are likely to be colored by their experience in lesser, though not unimportant, situations. For example, such forces have effectively utilized roadblocks and traffic barriers in bringing about the capture of law breakers. Cordon-type roadblocks traditionally have been established around industrial plants or other establishments visited by fire, explosion and, occasionally, civil riots. Such law-breaking and accident-type situations are not directly comparable to a disaster situation. The differences, both in kind and degree, between the needs to be met in these cases and those encountered in large-scale disaster are such as to require a much more elegant regimen than has been utilized or perhaps even visualized heretofore.[44]

The success of various governmental directives and control techniques in normal social functioning has often caused control authorities to overestimate their power to control population movement in disasters. Much of the movement in disasters is of the "silent" type which goes unnoticed by authorities. Voluntary and unofficial movement probably has always exceeded the amount of officially-controlled movement, in both wartime and recent peacetime disasters. People who evacuated London privately, for example, exceeded the evacuees moved by the government by 500,000 between July and September, 1939.[45] Titmuss points out that over two million persons had "silently" evacuated themselves during the blitz:

---

on Disaster Studies of the National Research Council, Washington, D. C., January 8-10, 1953" (Unpublished report, National Opinion Research Center, University of Chicago, 1953).

44. For a summary of the literature on crowds and a review of the methods of crowd control used by police officers in five metropolitan communities in Canada and the United States, see William A. Westley, The Formation, Nature, and Control of Crowds (Canada: Defence Research Board, Directorate of Atomic Research, April 1956).

45. Fred C. Ikle and Harry V. Kincaid, Social Aspects of Wartime Evacuation of American Cities (Committee on Disaster Studies, Report No. 4 /Washington, D. C.: National Academy of Sciences-National Research Council, Publication 393, 1956/), 36.

> So great was the flight to the western half of England, that, in the reception areas of Devonshire, private evacuees outnumbered official evacuees by roughly seven hundred per cent. . . It is astonishing that such a large number of people could, within a short period of time, leave the vulnerable areas without the government being aware of the fact.[46]

Titmuss also notes the same tendency in the large-scale return of evacuees to their homes in 1945:

> It had been estimated in September, 1944, that at least 500,000 evacuees would have to be brought back to Greater London in organized parties. Six months later the figure was scaled down to 250,000. When the first train was run in June it had been further reduced to 83,000. In the end only 54,000 travelled. An analysis of the figures for all evacuation areas in Britain (including London) showed that, of 1,000,000 or so evacuees billeted or otherwise accommodated in September, 1944, less than 75,000 returned home in organized parties under Government auspices. . . Once again in the history of evacuation the elaborate planning and the careful organization by Government departments and local authorities went by default. The people behaved in an unexpected way. By their behavior they made planning difficult; they made a good plan look, in the end, like a bad plan.[47]

The failure of governmental, law enforcement, and relief officials to recognize the great volume of both personal and informational forms of movement by the general populace also can be documented repeatedly in recent peacetime disasters. In the Warner Robins, Georgia, tornado, for example, it is noted that one of the "unsolved mysteries" of the disaster was the location of some 365 families made homeless. At the time of the investigation no one apparently knew where most of them had found lodging.[48] This is only one instance of a more general lack of attention to many significant aspects of disaster behavior on the part of governmental and disaster agency officials. In the NORC study of the White County, Arkansas, tornado, two separate samples were drawn--one sample composed of 81 special informants,

---

46. Richard M. Titmuss, Problems of Social Policy (London: H. M. Stationery office and Longmans, Green, and Co., 1950), 102.

47. Ibid., 433-434.

48. Lewis M. Killian and Jeannette F. Rayner, "Assessment of Disaster Operations Following the Warner Robins Tornado" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, August 20, 1953), 14.

representing the major governmental, relief, law enforcement, and communication agencies which operated in the disaster; the other composed of a random area sample of 342 persons in the general population. A comparison of the interviews from these two samples indicated that a large number of the special informants, especially those from outside the struck area, had grossly inadequate knowledge concerning the movement and behavior of the majority of the population. Many of them were totally unaware of vast areas of human activity which occurred outside their special field of attention.[49]

These and other relevant findings illustrate the large number of human needs and forms of behavior which do not receive cognizance in disaster plans and operations. Disaster control and relief agencies often gain a false sense of power and omnipotence over population movement by virtue of structuring one segment of the total social field. There often is a general failure to recognize the organic, interrelated character of this field--e.g., that control in one area may cause continuous leaks or serious breakdowns in other parts of the control structure. It is axiomatic that the pressures that result in such breakthroughs stem directly from unsatisfied human needs and that until such needs are met in substantial measure, the problem is not solved. That is to say, the situation is not truly under control. Parenthetically, it also might be noted that these findings suggest the dubious validity of general reconstructions of disaster behavior based solely on the testimony of "official" or "expert" informants.

## Use of Roadblocks or Traffic Barriers

In areas struck by natural disaster, peripheral or cordon roadblocks and other traffic control procedures are generally used for the avowed purpose of "preserving life and property" or, more commonly expressed, "keeping all those who have no legitimate reason for using the highways under disaster conditions, off of them."[50] Beyond a doubt there is merit in the basic premise of the operation of roadblocks in or around disaster-struck areas, as a device for channeling the flow of movement and screening the types of convergers. Studies of past disasters, however, point to a number of deficiencies in their use.

Although police departments of large urban centers and, to a different degree, state police are trained in roadblock control techniques, they

---

49. Marks, Fritz, et al., op. cit., I.

50. Charles W. Bahme, Handbook of Disaster Control (Los Angeles: C. Bahme, 1952), 75.

manifestly lack both the criteria and the means of identifying all who have legitimate reasons for entering a disaster area and those who do not. In the face of need, however, roadblocks are established and on some preconceived or hastily formulated rationale decisions are made as to who should enter and who should not. Official recognition and right-of-access are generally accorded to the identifiable personnel, vehicles, and equipment of police, fire-fighting, and military forces; medical and mortuary groups; Civil Defense, Red Cross, and Salvation Army organizations; the clergy; and public utilities companies.[51]

Before many of these groups arrive in organized fashion, however, there is, in most large-scale disasters, compelling and urgent need for rescue work. As we have noted previously, much of this work is usually done by the physically unimpaired victims and by the initial waves of external convergers.[52] These helpers and the anxious convergers normally begin moving into the disaster area in heavy volume before police blockades can be established.[53] Within fifteen minutes to two hours in instantaneous, explosive-type disasters, the population of the disaster-struck area may be more than doubled by the convergence of persons from the contiguous and proximate zones. The speed and volume of movement normally is so great that it cannot be handled effectively by the ordinary security forces available--a fact which emphasizes the need to train large numbers of local volunteers for traffic direction and control tasks.

Coincident with or shortly following this convergence toward the disaster area, heavy congestion usually develops on the arterial routes leading to hospitals and medical centers in the contiguous and proximate zones and around these centers themselves. Thus, next in importance to the establishment of competently manned roadblocks, perhaps, is that of keeping routes clear for the flow of emergency traffic. This requires the patrolling of routes by cruising police vehicles,[54] guided and controlled, wherever feasible, by observer aircraft.

The medical investigators of the Worcester, Massachusetts, tornado point out that medical control of the evacuation and field triage of casualties could be tied closely with the activities of the police in establishing road-

---

51. Moore, Crawford, et al., "Waco-San Angelo Disaster Study: Report of Second Year's Work," op. cit., sec., "Commercial Agencies," 14.

52. ISONEVO, op. cit., II, 186-193; and Rosow, "Public Authorities in Two Tornadoes," op. cit., 302.

53. Marks, Fritz, et al., op. cit., I, 519-520.

54. B. R. Caldwell, "Deployment of Police Personnel during Emergency Disaster," Journal of Criminal Law and Criminology, XXXV (1944), 128-133.

blocks.[55] The transportation of all casualties to hospitals, with no regard for the severity or type of injury, is one of the major contributors to the congestion which occurs around medical centers. This, together with our previous discussion, suggests a threefold function for roadblocks established around the perimeter of a disaster area: (1) the security force operation to control all forms of traffic in and out of the area; (2) a medical triage operation, and (3) an information-communication operation.[56] It is appropriate to emphasize that the locations chosen for the operation of such functionally unified control points should be adequate and strategic, both geometrically and geographically. Each of the stations, in turn, should be connected with a master control or command station which, regardless of its location, would be immediately identifiable to every regular member of the disaster organization.

One of the frequent difficulties encountered in the use of road blocks or check points is that they do not keep pace with the ever-widening circles of convergence. In the progression of time following the disaster, the convergers come from progressively more distant places. To prevent the stagnation and amassing of persons and vehicles at the edge of the disaster area, which so frequently hinders the operation of relief efforts, it is usually necessary to establish control points at a considerable distance from the disaster area.[57] In large-scale disasters, it may be necessary to establish external control points at the perimeter of the proximate zone--i.e., at distances ranging, say, from 50 to 100 miles from the disaster area.

In general, past experience in the use of road blocks in disasters suggests not only the need for greater use of local personnel and resources, and the integration of security, medical, and information functions, but also more fundamental consideration to problems of organizing the ground in and around disaster areas. Many of the problems of congestion resulting from convergence can be solved by more strategic spatial location and juxtaposition of the various emergency functions. The general principle of "siphoning" convergence from the disaster area and from critical points in contiguous

---

55. Henry J. Bakst, Robert L. Berg, Fred D. Foster, and John W. Raker, "The Worcester County Tornado: A Medical Study of the Disaster" (Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, January 17, 1955 /Limited Distribution/), 65-66.

56. Dr. Harry B. Williams has suggested an additional function that might be served at some of the control points--i.e., the assignment, organization, and dispatching of volunteer workers, and the marshalling and control of equipment. (Personal communication, February 18, 1957.)

57. Marks, Fritz, et al., op. cit., III, Appendix B-2, 57.

and proximate zones to other uncongested areas applies as well to problems of traffic control as it does to problems of communications.[58] Although the specific tactics for applying this principle in actual disasters must remain flexible, alternate strategies for organizing the disaster ground can and should be worked out in pre-disaster planning. Some of the principles of ground organization are discussed in the "Project East River" reports[59] and in various Federal Civil Defense Administration manuals.[60] Current evidence suggests that these principles should receive more detailed consideration and application in planning for convergence problems.

## Pass or Identification Systems

Auxiliary to the effective operation of the control stations just described is the need for instituting an adequate pass or identification system to enable the control authorities to determine the type of action needed in handling the various types of convergers. A review of the pass systems used in several recent disasters indicates a number of problems which should be taken into account in further planning.

1. Aside from the officially-recognized right of access groups previously mentioned, there are no established pre-disaster criteria for the issuance of passes which are more or less widely understood by the general populace. Virtually all pass systems instituted in recent disasters have been based upon impromptu decisions rather than carefully-formulated plans. This had not only produced ill-advised decisions and conflict in establishing criteria, but has also meant that the pass systems have been instituted too late to be effective in handling the initial waves of convergers.[61]

---

58. See United States Civil Defense: Civil Defense Urban Analysis ("Federal Civil Defense Administration Technical Manual," No. TM-8-1 /Washington: U. S. Government Printing Office, July 1953/), 53-54.

59. Project East River (New York: Associated Universities, Inc., October 1952), part VI, "Disaster Services and Operations," 38-61; and ibid., part VII, "Warning and Communications for Civil Defense."

60. United States Civil Defense: Planning and Organizing for Civil Defense Traffic Operations ("Federal Civil Defense Administration Technical Manual," No. TM-27-2 /Washington, D. C.: U. S. Government Printing Office, November 1955/); and United States Civil Defense: Procedure for Evacuation Traffic Movement Studies ("Federal Civil Defense Administration Technical Manual," No. TM-27-1 /Washington, D. C.: U. S. Government Printing Office, November 1955/).

61. Harry E. Moore and Fred R. Crawford, "Waco-San Angelo Disaster Study: First Annual Report, 1 July 1953 - 1 July 1954" (Unpublished report,

2. The criteria used for determining admittance or exclusion normally have been oriented toward official definitions of legitimacy, and have failed to recognize the needs of the informal convergers discussed in Chapter III, especially those which are viewed as legitimate by a disaster-struck population (the returnees, the anxious, and the helpers). The differential conception of legitimacy held by local and outside authorities and by formal and informal groups has provided a major source of ill feeling between the stricken population and the police or other control authorities in several disasters.[62]

3. Even in cases where the needs of informal convergers have received recognition, the actual screening function has oftentimes been vested in organizations which are least capable of determining the legitimacy of requests for admittance. In the White County, Arkansas, tornado, for example, the State Police took charge of the pass system. Top officials of the Patrol later admitted that their heavy reliance on impromptu personal judgments of the individuals requesting passes resulted in inequities.[63]

4. Lack of coordination among the various agencies operating in the disaster has resulted in considerable conflict and confusion over the use of a pass system. In at least one disaster, different passes were issued by four independent agencies and one of the agencies refused to honor the passes issued by the other groups.[64]

These findings support and reinforce a recommendation for further study of traffic passes made by "Project East River:"

> Traffic Passes. It is evident that a system of passes for civil defense traffic on streets and highways must be instituted. If this is not done either of two situations will probably develop; essential but unidentified civil defense traffic will be unable to move through control points, or traffic jams will quickly develop, with essential and non-essential traffic clogging the roads, thus preventing the essential traffic from moving.

---

Department of Sociology, University of Texas, 1954), sec., "Cities in Crisis," 7-8; and Rosow, "Public Authorities in Two Tornadoes," op. cit., 324.

62. Moore and Crawford, loc. cit., 9-11; Rosow, "Public Authorities in Two Tornadoes," op. cit., 217-222; and William H. Form, Sigmund Nosow, Gregory P. Stone, and Charles M. Westie, "Rescue Behavior in the Flint-Beecher Tornado" (Unpublished report, Social Research Service, Michigan State University, 1956), 123.

63. Marks, Fritz, et al., op. cit., I, 241.

64. Rosow, "Public Authorities in Two Tornadoes," op. cit., 324-328.

*Red Cross Photo*

**PLATE 13**

TRAFFIC PASSES. Holden, Massachusetts, June 10, 1953. Victims of the tornado request passes to visit their devastated homes. Passes were required after the authorities set up machinery to prevent looting in the disaster area. Conflicting conceptions of legitimacy in entering a disaster area frequently cause resentments and conflicts between the populace and pass-issuing authorities and between different disaster organizations.

The essential traffic is more than the easily identified military vehicles, fire engines, and police cars. The over-all defense potential of the nation, including the military potential, depends upon continuous operation of industry and commerce. These, in turn, depend upon the people. There must be plans to insure that the portion of the public having key posts or essential duties may resume production as promptly as possible. The butcher, the baker, the power station operator have important roles in the community. Yet few steps have been taken toward the development of methods or procedures of issuing passes to insure that such essential workers can move. The problem of passes is further complicated because many essential workers may have no formal connection with civil defense. The following recommendation is accordingly submitted:

> Recommendation: Studies be undertaken, perhaps as an extension of the work in connection with the program on the regulation and control of emergency traffic, to develop methods for the use of passes in emergency periods.[65]

## Establishment of Central Supply Clearinghouse

An obvious need stemming from the problems raised by the deluge of clothing and other unsolicited supplies which converge on the disaster area is the need to centralize and coordinate supply functions. A considerable amount of unnecessary pedestrian and vehicular traffic could be prevented or channelled by establishing a central supply clearinghouse through which all requests for assistance and offers of aid would be filtered. By coordinating such a clearinghouse with the central control and information center, it would be possible to achieve some degree of order out of the chaotic flow of materiel convergence. The clearinghouse would initiate requests for assistance through the central control center to the dispersed information centers, accept or reject offers of material assistance in terms of overall requirements, forward requests to transporting agencies, designate the location of receiving and supply depots, and control the allocation of available supplies.[66] It should be emphasized that this central clearinghouse must recognize the role of the numerous voluntary associations in the community as a potential for controlling a large portion of the volunteered materiel convergence. A plan for developing such a clearinghouse should incorporate representation of the major voluntary associations as well as the formal disaster agencies.

---

65. Project East River, op. cit., part VI.
66. Courtney, Balloch, Ludwig, and Bowman, op. cit., 46-47.

## Cease and Desist Appeals

In several disasters, cease-and-desist-type appeals have been broadcast over the radio or published in the newspapers in an attempt to control or alleviate convergence on disaster areas.[67] In the Holland floods, both the press and radio disseminated urgent requests to the population not to go to the disaster area.[68] In the St. Paul, Minnesota, plant explosion, radio appeals were made requesting persons not to telephone the plant.[69] The data from various reports and studies of disaster indicate that such appeals are usually ineffective. In the absence of a pre-disaster public education program and an organized, coordinated plan for handling disaster communication, it must be concluded that such measures have little promise as a means of control.

## Other Control Techniques

A dominant theme which has pervaded this review of control techniques is the futility of methods aimed solely at constraint or blockage of convergence. We have noted that planning must be predicated on the basic assumption that convergence is an inevitable phenomenon accompanying disasters and that control efforts must be aimed at channeling the behavior into adaptive, constructive forms. This principle has received explicit or implicit recognition in a number of disasters. In the San Angelo, Texas, tornado disaster, for example, the large number of curiosity seekers who entered the area on the day following the disaster were permitted to drive through the guarded disaster area. Two hours during the day were set aside for this purpose and the route was designated and carefully guarded to prevent persons or cars from leaving it. During these two hours an estimated 2,400 automobiles and 10,000 persons toured the area.[70]

Such "guided tours" have also been used in other disaster areas, not only as a means of satisfying curiosity needs,[71] but also as a device for

---

67. Rosow, "Public Authorities in Two Tornadoes," op. cit., 344; and Lewis M. Killian, Randolph Quick, and Frank Stockwell, A Study of Response to the Houston, Texas Fireworks Explosion (Committee on Disaster Studies, Report No. 2 /Washington D. C.: National Academy of Sciences-National Research Council, Publication 391, 1956/).

68. ISONEVO, op. cit., IV, 19.

69. Marks, Fritz, et al., op. cit., III, Appendix B-6, 111.

70. Moore and Crawford, "Waco-San Angelo Disaster Study: First Annual Report, 1 July 1953 - 1 July 1954," op. cit., 18.

71. Dr. John L. Kennedy has commented that an interesting hypothesis

augmenting disaster relief funds. In several disasters, as persons leave the area, they have been requested to make monetary contributions. In the Flint-Beecher, Michigan, tornado, it is noted that the collection of money from curious sightseers may have contributed to the more favorable acceptance of outsiders by the local population.[72] The sale of souvenirs and photographs in Hiroshima and in other disasters[73] indicates another technique of adapting to the needs posed by the curious.

Useful principles and techniques for channeling convergence behavior also may be derived from a study of non-disaster convergence and crowd control situations. One of these is illustrated by the action of building contractors, who, when doing work in congested urban areas, erect bleachers for the convenience and control of the so-called "sidewalk superintendents." In other cases, appropriate openings or windows are inserted in board fences surrounding the project. Further illustrations may be found in the police-sponsored racing strips for "hot rodders," in the "knot hole gang" baseball clubs, in the handling of racial disturbances,[74] and in many other situations. It is not suggested here that these examples of crowd control in non-disaster situations are directly applicable to disaster situations. It is suggested, however, that a study of the basic principles derived from these events may be useful in developing methods and techniques applicable to the diversion, channeling, and control of convergence in disasters.[75]

---

about convergence is that the convergee has a deep-seated fear of the disaster cause (fire, drowning, etc.) and thus has more than usual interest in experiencing the phenomenon vicariously. He points out that the organized tour, if announced in advance, might delay individual convergence until the situation is under some kind of control. (Personal communication, February 6, 1956.)

72. Form, Nosow, Stone, and Westie, "Final Report on the Flint-Beecher Tornado," op. cit., 45.

73. Robert V. Hamilton, Ross M. Taylor, and George E. Rice, Jr., "A Social Psychological Interpretation of the Udall, Kansas, Tornado" (Unpublished report, University of Wichita, October 1955), 58.

74. Joseph D. Lohman, The Police and Minority Groups (Chicago: Chicago Park District, 1947).

75. For an initial effort to make such an application of crowd control principles to disaster situations, see William A. Westley, The Formation, Nature, and Control of Crowds, op. cit.

# CHAPTER V

## SUMMARY AND CONCLUSION

Convergence behavior is a virtually universal phenomenon following disasters. The informal mass movement of people, messages, and volunteered supplies toward the disaster-struck area has been documented and verified in nearly every study of disaster.

Despite the universality and frequency of this behavior, however, its full scope and significance is rarely appreciated. This is attested to by the scattered and fragmentary treatment of the subject in disaster research literature, and by the absence of adequate planning in current disaster organization.

In this paper we have attempted to develop a perspective from which to view the problem, a vocabulary for dealing with various facets of the problem, and a summary of the current state of knowledge on the problem. This has been an initial effort to structure the field, and like all initial structures, it requires further elaboration and refinement. It is hoped that the material presented, however, will encourage further thought, research, and practical planning efforts.

The problem of convergence, both theoretically and practically, is broad in scope and complex in its interrelationships. Although research and planning efforts necessitate segmentation of the problem, it is clear that the broad interrelationships must be kept continually in mind. The tendency in the past has been to view the problem in a highly constricted and unrefined fashion. Convergence behavior properly cannot be confined to the problem of "traffic," "sightseers," "outsiders," "curiosity seekers," and "unauthorized personnel." Both research and operational considerations require more critical distinctions than can be encompassed in these commonsensical terms.

We have noted that it is essential to recognize at least three major forms of convergence--personal, informational, and materiel--and that the process of convergence must be viewed and planned for in both its internal and external dimensions, and their interrelationships. As a step toward better understanding of the motivations of convergers, we have delineated five major types: (1) the returnees, (2) the anxious, (3) the helpers, (4) the curious, and (5) the exploiters. The evidence suggests that these are logically distinguishable types likely to be present in all disasters.

The terms introduced in this paper should be considered a minimal

vocabulary in developing further elaborations and refinements of the problem. Present disaster data on the convergence process are too inadequate to make more rigorous distinctions or to enable the quantitative estimation of the various forms of convergence and types of convergers by type of disaster, size and social characteristics of the community affected, time-space zones, or modes of control used by the authorities. Further research is needed to develop more refined and precise knowledge of the convergence process.

Even in our present state of knowledge, however, it is clear that further practical plans for the control of convergence can be developed and implemented. Past techniques of control usually have been based upon improvised post-disaster judgments, rather than upon orderly implementation of pre-disaster plans. These improvisations normally have been too segmental in nature or too limited in scope to prove effective in handling the many practical problems posed by convergence. The techniques used in the past, moreover, have placed too much emphasis on negative constraint measures rather than positive plans to prevent convergence or techniques to divert it into constructive channels once it is commenced.

The outline of a future convergence control program is sketched in the disaster literature and we have attempted to suggest some of the directions which might be taken in further policy formulation and operational planning on this problem. Briefly stated, the alternatives to complete disregard of the problem or post-impact improvisations lie in orienting disaster plans to a wider spatial and social context; developing greater precision and coordination of the information gathering, evaluating, and disseminating services; organizing and training the general populace to handle many of the disaster responsibilities which now are vested almost exclusively in formal communication, relief, and enforcement agencies; providing organizations which have formal disaster responsibilities with an orientation to convergence problems; and training personnel in the techniques for effectively handling these problems.

Convergence data emphasize once again that pre-disaster organization is paramount. Authority and function should be clearly delineated and understood before disaster strikes; it should not be left to resolution during the stress and chaos of the immediate post-disaster period. Questions of authority and jurisdiction that have to be resolved after disaster has struck are extremely detrimental to efficient and effective relief efforts. In this area, as in many others, the essential requirement of effective disaster planning lies in the organization, training, integration, and coordination of both the general populace and the formal passive defense forces.

Finally, and more generally, it should be noted that convergence behavior is not a phenomenon limited to disasters. In the present paper we

have focussed attention on a special case of a universal form of human movement. Convergence behavior is a basic element in the process of crowd formation and in the generation of social movements and social institutions. The motivating factors for convergence in disasters are similar to those found in other forms of human migration. Many of the information and communication problems impinging upon convergence in disasters are common to other communicative situations and interactions. As a practical control problem, convergence behavior is continually encountered by governmental and industrial planners, administrators, traffic engineers, firemen, law enforcement officials, telephone and telegraph personnel, and many others. Currently-held theories, concepts, and operations in various fields, therefore, can contribute to a theoretically more adequate and operationally more useful understanding of convergence in disasters. Correspondingly, further research on the convergence process in disasters potentially may result in valuable contributions to the knowledge of a number of basic and applied sciences.

## REFERENCES CITED


American National Red Cross. Disaster Manual--for Chapters.("American Red Cross Document," No. ARC 209.) Washington, D. C.: American National Red Cross, January 1955.

--------. Texas City Explosion, April 16, 1947. ("American Red Cross Document," No. ARC 1532.) Washington, D. C.: American National Red Cross, November 1948.

Bahme, Charles W. Handbook of Disaster Control. Los Angeles: C. Bahme, 1952.

Bakst, Henry J., Robert L. Berg, Fred D. Foster, and John W. Raker. "The Worcester County Tornado: A Medical Study of the Disaster." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, January 17, 1955. (LIMITED DISTRIBUTION)

Balloch, John, L. R. Braswell, Jeannette F. Rayner, and Lewis M. Killian. "Studies of Military Assistance in Civilian Disaster: England and the United States." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, August 20, 1953.

Baltimore and the H-Bomb. ("Studies in Business and Economics," Vol. IX, No. 2.) College Park, Maryland: University of Maryland, Bureau of Business and Economic Research, September 1955.

Bernert, Eleanor H., and Fred C. Ikle. "Evacuation and the Cohesion of Urban Groups," American Journal of Sociology, LVIII (1952), 133-138.

Breese, Gerald W. The Daytime Population of the Central Business District of Chicago. Chicago: University of Chicago Press, 1949.

Bucher, Rue. "Blame in Disasters: A Study of a Problematic Situation." Unpublished Master's thesis, Department of Sociology, University of Chicago, December 1954.

Burke, Kenneth. Permanence and Change. 2d ed.; Los Altos, California: Hermes Publications, 1954.

--------. A Grammar of Motives. New York: Prentice-Hall, 1945.

--------. A Rhetoric of Motives. New York: Prentice-Hall, 1950.

Caldwell, B. R. "Deployment of Police Personnel during Emergency Disaster," Journal of Criminal Law and Criminology, XXXV (1944), 128-133.

Cantril, Hadley, Hazel Gaudet, and Herta Hertzog. The Invasion from Mars. Princeton: Princeton University Press, 1940.

Clifford, Roy A. "Informal Group Actions in the Rio Grande Flood." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, February 1955.

Courtney, Douglas, John Balloch, Harvey Ludwig, and Elizabeth Bowman. "Operation Tulip: A Study of Military Assistance in the Netherlands Flood Disaster." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, June 21, 1954. (LIMITED DISTRIBUTION)

De Hoyos, Arturo. "The Tampico Disaster." Unpublished report, Social Research Service, Department of Sociology and Anthropology, Michigan State University, January 1956.

Diggory, James C. "Knowledge of Crisis Behavior Derived from Historical Sources." Paper presented at Annual Meeting, Society for Applied Anthropology, Indiana University, Bloomington, Indiana, May 5, 1955.

Diggory, James C., and A. Pepitone. "Behavior and Disaster." Unpublished report, University of Pennsylvania, October 1, 1953.

Form, William H., Sigmund Nosow, Gregory P. Stone and Charles M. Westie. "Final Report on the Flint-Beecher Tornado." Unpublished report, Social Research Service, Continuing Education Service, Michigan State College, 1954.

-------. "Rescue Behavior in the Flint-Beecher Tornado." Unpublished report, Social Research Service, Michigan State University, 1956.

Fritz, Charles E., and Eli S. Marks. "The NORC Studies of Human Behavior in Disaster," Journal of Social Issues, X, No. 3 (1954), 26-41.

Fritz, Charles E., Donald N. Michael, and Harry B. Williams. "Operation Alert 1955: Observations and Comments on Human Factors at 'Low Point.'" Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, 1955. (LIMITED DISTRIBUTION)

Fritz, Charles E., and Harry B. Williams. "The Human Being in Disasters: A Research Perspective," The Annals of the American Academy of Political and Social Science, CCCIX (January 1957), 42-51.

Grebler, Leo. "Continuity in the Re-building of Bombed Cities in Western Europe," American Journal of Sociology, LXI, No. 5 (March 1956), 463-469.

Hachiya, Michihiko. Hiroshima Diary. Chapel Hill: University of North Carolina Press, 1955.

Hamilton, Robert V., Ross M. Taylor, and George E. Rice, Jr. "A Social Psychological Interpretation of the Udall, Kansas, Tornado." Unpublished report, University of Wichita, October 1955.

Hersey, John. Hiroshima. New York: Alfred A. Knopf, 1946.

Hirshleifer, Jack. "Some Thoughts on the Social Structure after a Bombing Disaster," World Politics, VIII (January 1956), 206-227.

Iklé, Fred C. "The Effect of War Destruction upon the Ecology of Cities," Social Forces, XXIX, No. 4 (May 1951), 383-391.

-------. The Social Effects of Bombing. ("Technical Research Report," No. 17.) Maxwell Air Force Base, Alabama: Human Resources Research Institute, Air Research and Development Command, July 1953.

Iklé, Fred C., and Harry V. Kincaid. Social Aspects of Wartime Evacuation of American Cities. (Committee on Disaster Studies, Report No. 4.) Washington, D. C.: National Academy of Sciences-National Research Council, Publication 393, 1956.

Instituut voor Sociaal Onderzoek van het Nederlandse Volk. Studies in Holland Flood Disaster 1953. 4 vols. Washington, D. C.: National Academy of Sciences-National Research Council, Committee on Disaster Studies, 1955.

Janis, Irving L. Air War and Emotional Stress. New York: McGraw Hill Book Co., 1951.

Killian, Lewis M. An Introduction to Methodological Problems of Field Studies in Disasters. (Committee on Disaster Studies, Report No. 8.) Washington, D. C.: National Academy of Sciences-National Research Council, Publication 465, 1956.

-------. "The Significance of Multiple-Group Membership in Disaster," American Journal of Sociology, LVII, No. 4 (January 1952), 309-314.

-------. "Some Accomplishments and Some Needs in Disaster Study," Journal of Social Issues, X, No. 3 (1954), 66-72.

Killian, Lewis M., Randolph Quick, and Frank Stockwell. A Study of Response to the Houston, Texas, Fireworks Explosion. (Committee on Disaster Studies, Report No. 2.) Washington, D. C.: National Academy of Sciences-National Research Council, Publication 391, 1956.

Killian, Lewis M., and Jeannette F. Rayner. "Assessment of Disaster Operations Following the Warner Robins Tornado." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, August 20, 1953.

Klausner, Samuel Z., and Harry V. Kincaid. "Social Problems of Sheltering Flood Evacuees." Unpublished report, Bureau of Applied Social Research, Columbia University, 1956.

Ktsanes, T., F. E. La Violette, J. H. Rohrer, et al. "Community Structure, Organizational Structure, and Citizen Participation in Community-Wide Activities." Unpublished report, Urban Life Research Institute, Tulane University, November 1955.

Logan, Leonard, Lewis M. Killian, and Wyatt Marrs. A Study of the Effect of Catastrophe on Social Disorganization. ("Technical Memorandum," No. ORO-T-194.) Chevy Chase, Maryland: Operations Research Office, July 22, 1952.

Lohman, Joseph D. The Police and Minority Groups. Chicago: Chicago Park District, 1947.

Management of the Cocoanut Grove Burns at the Massachusetts General Hospital. Philadelphia: J. B. Lippincott Co., 1943.

Marks, Eli S., and Charles E. Fritz. "Comments on 'Questions for Discussion'--FCDA Briefing Session on Research Problems, for Committee on Disaster Studies of the National Research Council, Washington, D. C., January 8-10, 1953." Unpublished report, National Opinion Research Center, University of Chicago, 1953.

Marks, Eli S., Charles E. Fritz, et al. "Human Reactions in Disaster Situations." 3 vols. Unpublished report, National Opinion Research Center, University of Chicago, June 1954. (Available to qualified Armed Services Technical Information Agency users as ASTIA document, No. AD-107 594)

Matte, I. "Observations of the English in Wartime," Journal of Nervous and Mental Disease, XCVII (1943), 447-463.

Moore, Harry Estill. "Cities in Crisis: A Study of the Tornado Disasters in Waco and San Angelo, 1953, 1954." MS, Department of Sociology, University of Texas, 1956.

Moore, Harry E., and Fred R. Crawford. "Waco-San Angelo Disaster Study: First Annual Report, 1 July 1953 - 1 July 1954." Unpublished report, Department of Sociology, University of Texas, 1954.

Moore, Harry E., Fred Crawford, et al. "Waco-San Angelo Disaster Study: Report of Second Year's Work." Unpublished report, Department of Sociology, University of Texas, 1955.

Nagai, Takoshi. We of Nagasaki. New York: Duell, Sloan & Pearce, 1951.

Nearman, Mark J. "Reactions of a Civilian Population to Threat of Radioactive Contamination." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, July 20, 1954.

Paterson, J. L. H. "Letters from Shanghai: A Hospital in the Civilian War Zone," Lancet, CCXXXIII (September 18, 1937), 709-710.

--------. "More Letters from Shanghai," ibid., (October 2, 1937), 819-828.

Powell, John Walker. "An Introduction to the Natural History of Disaster." Unpublished final report, Disaster Research Project, Psychiatric Institute, University of Maryland Medical School, June 30, 1954.

Prince, Samuel H. Catastrophe and Social Change. New York: Columbia University Press, 1920.

Project East River. 10 parts. New York: Associated Universities, Inc., October 1952.

The Quetta Earthquake: 1935. Simla: Government of India Press, 1935.

Raker, John W., Anthony F. C. Wallace, Jeannette F. Rayner, and Anthony W. Eckert. Emergency Medical Care in Disasters: A Summary of Recorded Experience. (Committee on Disaster Studies, Report No. 6.) Washington, D. C.: National Academy of Sciences-National Research Council, Publication 457, 1956.

Ratcliffe, G. J. "Cooperating with Your Neighbors in Disaster Plans." Paper presented at the National Safety Congress, Chicago, Illinois, October 21, 1954.

Rosow, Irving. "A Comparative Study of Human Relations and Communications in Disaster." Unpublished MS, Committee on Disaster Studies, National Academy of Sciences-National Research Council, 1953.

--------. "Public Authorities in Two Tornadoes." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, November 1954. (To be published under the title, Authority in Natural Disaster, in the "Committee on Disaster Studies Report" series)

Scott, William A. "Public Reactions to a Surprise Civil Defense Alert in Oakland, California." Unpublished report, Survey Research Center, University of Michigan, August 1, 1955.

Siemes, Father S. J. "Hiroshima--August 6, 1945," Bulletin of the Atomic Scientists, I (May 15, 1946), 2-6.

Titmuss, Richard M. Problems of Social Policy. ("History of the Second World War: United Kingdom Series.") London: H. M. Stationery Office and Longmans, Green, and Co., 1950.

U. S. Federal Civil Defense Administration. National Communications Priorities. ("FCDA Technical Bulletin," No. TB-4-3.) Washington, D. C.: U. S. Government Printing Office, September 1955.

--------. United States Civil Defense: Civil Defense Urban Analysis. ("FCDA Technical Manual," No. TM-8-1.) Washington, D. C.: U. S. Government Printing Office, July 1953.

--------. United States Civil Defense: Planning and Organizing for Civil Defense Traffic Operations. ("FCDA Technical Manual," No. TM-27-2.) Washington, D. C.: U. S. Government Printing Office, November 1955.

--------. United States Civil Defense: Procedure for Evacuation Traffic Movement Studies. ("FCDA Technical Manual," No. TM-27-1.) Washington, D. C.: U. S. Government Printing Office, November 1955.

--------. United States Civil Defense: Registration and Information Services. ("FCDA Technical Manual," No. TM-12-1.) Washington, D. C.: U. S. Government Printing Office, May 1954.

U. S. Strategic Bombing Survey. The Effects of Strategic Bombing on German Morale. 2 vols. Washington, D. C.: U. S. Government Printing Office, May 1947.

Wallace, Anthony F. C. "The Disruption of the Individual's Identification with His Culture in Disasters and Other Extreme Situations." Paper presented at Conference on Theories of Human Behavior in Extreme Situations, sponsored by the Committee on Disaster Studies, Division of Anthropology and Psychology, National Academy of Sciences-National Research Council, Vassar College, Poughkeepsie, New York, February 12-13, 1955.

-------. Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation. (Committee on Disaster Studies, Report No. 3.) Washington, D. C.: National Academy of Sciences-National Research Council, Publication 392, 1956.

Washburn, Eleanor S. "Lessons of the Cocoanut Grove Fire," Survey Midmonthly, LXXIX (February 1943), 46-48.

Westley, William A. The Formation, Nature, and Control of Crowds. Canada: Defence Research Board, Directorate of Atomic Research, April 1956.

-------. "The Police: A Sociological Study of Law, Custom, and Morality." Unpublished Doctoral dissertation, Department of Sociology, University of Chicago, 1953.

-------. "Violence and the Police," American Journal of Sociology, LIX (1955), 34-41.

Williams, Harry B. "Communication in Community Disasters." Unpublished Doctoral dissertation, Department of Sociology, University of North Carolina, 1956.

-------. "Communication in Disaster." Paper presented at Fiftieth Annual Meeting, American Sociological Society, Washington, D. C., August 31-September 2, 1955.

Williams, Harry B., and Donald Michael. "Observations and Comments on the Function of Federal Civil Defense Communication and Control Centers in Operation Alert." Unpublished report, Committee on Disaster Studies, National Academy of Sciences-National Research Council, 1954. (FOR OFFICIAL USE ONLY)

Williams, Harry B., and Jeannette F. Rayner. "Emergency Medical Services in Disaster," Medical Annals of the District of Columbia, XXV, No. 12 (December 1956), 655-662.

Young, Michael. "The Role of the Extended Family in a Disaster," Human Relations, III, No. 3 (1954), 383-391.

## Other Disaster Study Publications

Publications may be ordered from the Publications Office,
National Academy of Sciences - National Research Council,
2101 Constitution Avenue, Washington 25, D. C.

1. Human Behavior in Extreme Situations: A Survey of the Literature and Suggestions for Further Research, by Anthony F. C. Wallace. 1956; 31 p., paper; $0.75. Pub. 390. The major types of literature pertaining to disaster and other extreme situations and their potential usefulness to social and behavioral scientists are discussed. Limitations inherent in disaster research and approaches for future research are suggested.

2. The Houston Fireworks Explosion, by Lewis M. Killian with the assistance of Randolph Quick and Frank Stockwell. 1956; 32 p., paper; $0.75. Pub. 391. This study focuses on how individuals decided what had occurred through processes of perception, interpretation, and communication following a fireworks plant explosion.

3. Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation, by Anthony F. C. Wallace. 1956; 178 p. text, 22 p. illustrations, paper; $2.50. Pub. 392. A time-space model of human behavior in disaster is developed. Individual, group, and community behavior are reported and analyzed in terms of this model.

4. Some Social Aspects of Wartime Evacuation of American Cities: With Particular Emphasis on Long-term Housing and Reemployment, by Fred C. Iklé and Harry V. Kincaid. 1956; 107 p., paper; $2.00. Pub. 393. A report on the social and economic problems associated with the wartime evacuation of American cities. Problems arising from the semi-permanent removal of large numbers of urban dwellers to safer areas, as opposed to temporary dispersal, are analyzed.

5. The Child and His Family in Disaster: A Study of the 1953 Vicksburg Tornado, by Stewart E. Perry, Earle Silber, M. D., and Donald A. Bloch, M. D., 1956; 62 p., paper; $1.50. Pub. 394. A report of the emotional impact of disaster on children and their reactions to it as seen by their parents, and the processes of communication and adjustment within the family. Recommendations on the handling of children after a disaster. (Formerly listed as Children in Disaster.)

6. Emergency Medical Care in Disasters: A Summary of Recorded Experiences, by John W. Raker, Anthony F. C. Wallace, Jeannette F. Rayner with the collaboration of Anthony W. Eckert. 1956; 76 p., paper; $1.50. Pub. 457. Disaster problems which affect medical care are identified and analyzed. Therapy and the results of therapy following disasters, and the administrative problems of medical care are some of the topics studied.

7. The Rio Grande Flood: A Comparative Study of Border Communities in Disaster, by Roy A. Clifford. 1956; 145 p., paper; $2.50. Pub. 458. A comparative analysis of social and cultural factors which affected responses of individuals, groups, and formal organizations to floods and flood warnings in Piedras Negras, Mexico, and Eagle Pass, Texas.

8. An Introduction to Methodological Problems of Field Studies in Disasters, by Lewis M. Killian. 1956; 35 p., paper; $0.75. Pub. 465. Problems in selection of events to study, research design, selection of subjects, data collection and analysis, timing, retrospective interviewing, entree into the community, and reporting of findings are discussed.

## Reports in Preparation

Authority in Natural Disaster, by Irving Rosow

The Effects of a Threatening Rumor on a Disaster-Stricken Community: The Port Jervis Study, * by Elliott R. Danzig, Paul W. Thayar, and Lila R. Galanter

Problems of Organization and Management in Disaster, * by Charles E. Fritz, Lewis M. Killian, John H. Rohrer, and Harry B. Williams

Withdrawal Behavior in Disaster: Escape, Flight, and Evacuation, * by Fred C. Iklé, E. L. Quarantelli, Jeannette F. Rayner, and Stephen B. Withey

Psychological Concepts in the Study of Disaster Behavior, * by Dwight W. Chapman

Communication in Disasters, * by Harry B. Williams

---

*Title tentative.

## NATIONAL ACADEMY OF SCIENCES—
## NATIONAL RESEARCH COUNCIL

The National Academy of Sciences–National Research Council is a private, nonprofit organization of scientists, dedicated to the furtherance of science and to its use for the general welfare.

The Academy itself was established in 1863 under a Congressional charter signed by President Lincoln. Empowered to provide for all activities appropriate to academies of science, it was also required by its charter to act as an adviser to the Federal Government in scientific matters. This provision accounts for the close ties that have always existed between the Academy and the Government, although the Academy is not a governmental agency.

The National Research Council was established by the Academy in 1916, at the request of President Wilson, to enable scientists generally to associate their efforts with those of the limited membership of the Academy in service to the nation, to society, and to science at home and abroad. Members of the National Research Council receive their appointments from the President of the Academy. They include representatives nominated by the major scientific and technical societies, representatives of the Federal Government, and a number of members-at-large. In addition, several thousand scientists and engineers take part in the activities of the Research Council through membership on its various boards and committees.

Receiving funds from both public and private sources, by contributions, grant, or contract, the Academy and its Research Council thus work to stimulate research and its applications, to survey the broad possibilities of science, to promote effective utilization of the scientific and technical resources of the country, to serve the Government, and to further the general interests of science.