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SOME MAJOR THEMES IN THE EMPIRICAL

DISASTER EVACUATION LITERATURE

Benigno E. Aguirre   Robert G. Swisher

Department of Sociology
Disaster Research Center
The Ohio State University

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Some Major Themes in the Empirical Disaster Evacuation Literature

As part of the general emphasis now well under way toward codifying the disaster research literature (for a review of this trend see Quarantelli and Dynes, 1977) this paper reviews the literature on evacuations in disasters. The aim is to describe what is known about the responses of individuals and families to warning and evacuation, as well as the processes of local and national coordination. The predominant meanings attached to evacuation and evacuees in the social science literature are noticed, and needed revision of these views are suggested. The paper is divided into three parts, in which the method, results, and recommendations are presented.

Method

Two criteria, substantive and temporal, are used to classify the specific works surveyed. The first, related to the focus of the research, distinguishes among individual, family, organization, community, society and international types of analyses (Mileti et al., 1975). The latter, related to the time when evacuation was studied, identifies three settings for research: conditions, characteristics, and consequences. Condition studies stress the general historical circumstances and the more immediate and relevant socio-cultural setting as these affect evacuations. Characteristics, focusing on the time when evacuations take place, refers to the "actual or specific observable features of who did what?" (Dynes and Quarantelli, 1975: 11). How did evacuation take place? Who did evacuate? Consequences focus on the effect of population mobility for the sending and receiving communities as well as for the evacuees themselves.

The two axes of differentiation were used as heuristic devices to select and order specific studies. Neither of them however, generate totally exclusive categories, and, if only for this reason, the matrix cannot withstand a rigorous examination. It is, nevertheless, sufficiently precise

for the present purpose: to divide the literature into broad classes and to document the relative emphases in it.

DRC's annotated Inventory of Disaster Research, covering scores of published and unpublished research reports written before 1976, was used to survey the literature, and the results were crosschecked with other recent bibliographical references. Probably very few evacuation reports were missed. No strict criteria of exclusion were used, since the objective was to survey all works which, however briefly, had dealt with evacuation in some explicit fashion. Agency plans and technical and engineering reports were excluded.

Results

In terms of overall emphasis, studies of evacuation are sorely lacking at the international, community and society levels, while the area of characteristics has received the lion's share of the research.

Mileti and Beck (1973) describe four processes important in explaining the evacuation of individuals: communication mode, content, perceived certainty, and confirmation. Attempts at confirmation appear to play a crucial role in producing evacuation (Moore, 1963: 37; Blum and Klass, 1956: 33). Warnings are more likely to be believed if they are individualized and made personal; those made by mass communication systems are less effective. While a number of characteristics of persons such as age, sex, race, education, and income mediate the effect of warning on evacuation, the literature suggests that the one characteristic most likely to lead to evacuation is previous disaster experience (Moore, 1963). Various studies of disasters in the southern coast of the United States support this. Class status may be inversely related to propensity to evacuate (Rohrer, 1954). Presumably, the decision to evacuate is often marked by role conflict (Logan, 1953), when individual responsibilities to organizational

roles relevant to the disaster response conflict with family role obligations or with desire for self-preservation. However, an unpublished study by Dynes and Quarantelli suggests role conflict may be still another disaster myth.

So far the physical aspect of evacuation has dominated discussion of characteristics. How and where the evacuees go are the main questions. In the United States evacuation is typically done by private means of transportation (Moore, 1964). The time and distance involved in evacuation (Moore, 1963; Ikle, Quarantelli, Rayner, Withey, 1957) and the physical and social conditions encountered during evacuation (Moore, 1964) have been noted, although much more attention has been focused on the sheltering of evacuees. In line with findings of studies of American extended family relations during other types of emergencies, the literature shows that individuals are more likely to seek shelter in privately-owned homes of relatives and friends than in hotels, motels, and public shelters. This is generally true for all social classes, although, proportionally, lower class persons utilize public shelters more and upper class persons less.

Evacuations in general, as is true of writings on migration, have been perceived as a source of social and psychic disorganization for evacuees. The psychological impact of leaving under force and suddenly, and the often difficult period of accommodation of evacuees to their hosts have been studied (Holland, 1955; Centre d'Etudes Psychosociologiques, 1966, Crawford and Moore, 1957). In general, though, studies of consequences of evacuation at the individual level are rare.

Similar to individual level studies, at the family level study of conditions have centered on the response of families to warning. Drabek has shown the initial disbelief to warnings and the attempt of families

TIME FOCUS

Substantive Focus	Conditions	Characteristics	Consequences
Individual	12	16	5
Small Group	5	7	4
Complex Organization	4	14	3
Community	3	4	5
Society	1	6	9
International	0	0	1

Table 1   Evacuation Material: Temporal and Substantive Dimensions. See the Bibliography for the works surveyed. Coe sheets are available from the authors upon request.

to confirm and evaluate them through consultation with friends, kin, neigh-
bors and authorities, as well as through personal observations of the
disaster agent (Drabek, 1969). There is agreement in the literature that
the decision to evacuate occurs in families and is usually made by family
units. Wartime evacuations of children, when adults remained in threatened
areas for defense and production, have been judged inappropriate and the
cause of widespread unhappiness (Bernett and Ikle, Fogelman and Parenton,
1959). The importance of the family in evacuation has been shown in the
Philippines (Carroll and Parco, 1966) as well as in other studies. Most
evacuees go to the home of relatives and friends (Haas et al., 1976), and
most assistance is family-centered (Fogelman and Parenton, 1959: 134;
Kunreuther and Fiore, 1966). Those in public shelters stay close to their
neighbors (Bates et al., 1963; Moore et al., 1963).

The consequences of evacuation in terms of family behavior in emergency
quarters (Mileti et al., 1975) has received study. Loss of privacy and
different life styles cause stress among families in public and private
shelters. Females may have a more difficult time adjusting than males
(Bernert and Ikle,   ; Stoddard, 1961).

As a result of the prevailing complex organizational focus of Disaster
Research Center (DRC) research, the activity of organizations in disasters
has received some study. With one exception (Fitzpatrick and Waxman, 1972),
however, evacuation has never been a primary DRC research interest. The
need for a central coordinating unit to direct organizational evacuation
and warning efforts initially noted by Albert and Segaloff (1962: 23),
and for interorganizational evacuation planning, are now important foci of
research. Focusing on characteristics, Kueneman (1973: 11; see also Hannigan
and Kueneman, 1974) studied the work of emergency operation centers (EOC)
in Canada. EOCs work best once organizational responsibilities are

assigned in evacuation. Kennedy (1967), studying an effective evacuation

of New Yorkers under imminent danger, develops the idea that organizations'

public identities differ in their effectiveness in convincing threatened

populations of the immediacy and credibility of warnings and of the need

for evacuation. Moreover, the speed of onset of a disaster may have impli-

cations for the effectiveness of organizational responses. Fitzpatrick

and Waxman (1972) document an effective evacuation under conditions of

slow onset. So far, however, the relation between organizational effective-

ness and speed of onset, whether curvilinear (either very rapid or very

slow onsets increase the effectiveness of organizational evacuation efforts)

or of some other form, is not established.

The literature dealing with the consequences of evacuation for organiza-

tions has been dominated til now by the problem of sheltering and providing

for the evacueed population (Balloch, 1953; Yutzy, 1964; Forrest, 1970;

Ponting, 1970).

Whether or not to order an evacuation and which agency should make the

decision constitutes the focus on condition at the community level. Problems

of lines of authority, risks involved in the evacuation decision, and respon-

sibility, should there be an evacuation which was not needed, are all in-

cluded at this level. Moreover, there is the problem of deciding what areas

in the community should be evacuated (Moore et al., 1964: 87-91). Problems

of coordination of activities and resources is usually tapped in the study

of characteristics. Wallace (1959: 78-81) discusses the work of volunteers

in aiding the established agencies with carrying out evacuation-related

tasks. The importance of volunteers in distributing evacuees in shelters

has been noted (Moore, 1964: 91). Moore's account is also instructive,

in that it shows that, although the community governmental structure is of

primary importance in the coordination process, informal voluntary structures

emerge which have significant impact. In terms of consequences, the litera-
ture does not often distinguish between evacuation and disaster effects.
In general, evacuations stimulate community governments to create or improve
disaster planning as well as some sort of interorganizational coordination
unit (Moore, 1964: 99-102; Wallace, 1956: 106).

Societal level studies either deal with actual disaster cases or are
efforts to plan for possible massive transfers of populations under nuclear
attack, or war. Despite the obvious differences in real and imagined accounts,
these two types share in common the view of evacuation as a massive national
or regional effort, involving society-wide systems e.g., transportation,
food production and distribution, medical services, communication. These
systems and their interrelationships shape the type of evacuation that can
take place. Evacuations are seen as the relocation of persons from high
risk areas to host areas for time periods exceeding one week. Billheimer
et al., (1976) argue that in the United States at least 80% of all evacuees
will use private means of transportation; this has also been suggested by
Hans and Sell (1974). Haas (1976) documents the extensive use of private
transportation in Darwin, Australia, even as the national government provided
air transportation for evacuees. Billheimer et al., suggest that in the
Eastern cities of the United States local bus fleets will have to be supple-
mented by intercity buses and rail passenger services. Under this type of
national emergency, transportation demands will greatly exceed the capacity
of local authorities; coordination and support will be needed from state
and federal agencies. Christiansen and Warner (1974) suggest that the
sharing of private residences will be a major source of housing during
the emergency period. Information will also need some sort of central co-
ordination point, to avoid what Parr et al., (1975) saw as a major problem--
the inaccurate reporting and transmission of news.

The discussion of consequences at this level of analysis revolves around the hypothesized adaptiveness of various delivery systems (food, medical, communication, transportation, economic) to changed conditions and the integration of the evacuees into the social fabric of their host communities. The longer period of sheltering associated with these types of evacuation are seen as heightening these problems. Some form of economic control will be needed during and following the evacuation (Billheimer et al., 1976). Haas et al., (1976) and Ikle and Kincaid (1956) discuss the need for a force of workers to remain in the threatened or impacted areas to continue coordination activities.

Gay and Chenault (1974) point out that the reception and care of evacuees in the host communities is fundamentally a problem of maintaining and creating organized patterns of behavior, which would call for the expansion of existing organizational capacities either through the assumption by existing organizations of new organizational responsibilities or the creation of new organizations. This includes not only sheltering but also the provision of employment and human services. For example, following the Darwin evacuation the Australian government provided governmental employment to the evacuees while in the host community (Haas et al., 1976). In the Darwin case evacuation involved the breaking or "stretching" of legal restrictions and lines of authority, and although this made the provision of services more efficient, it eventually resulted in problems of funding reimbursements during the post-evacuation period.

We could find only one international study of evacuation. Clifford (1955) deals with the subject in some detail in his use of the Parsonian social action schema to assess the effectiveness of complex bureaucracies in border Mexican and American communities faced with disaster-generated

tasks. A wide-ranging study for our purposes it focuses primarily on the

characteristics of these complex organizations and on the consequences of

their action for evacuation. The inability to evacuate Piedras Negras

effectively is explained by the social action orientation of local officials

to outside Mexican leaders and institutions--their particularism, ascription,

legalism, et cetera--and by the familistic orientation of the Mexicans.

Useful as Clifford's study is, the valid criticisms of Parson's works which

have appeared in the intervening years counsel against accepting Clifford's

interpretations at face value.

Conclusion

> For days highways had been rivers of humanity flowing steadily
> northward and westward away from the lethal powers....they had
> filled the small towns and the large cities as they advanced
> in the manner that a flooding stream fills ditches and ponds
> along its course....Now the killer...had passed...and the tide
> of humanity turned back toward the coast, and home (Moore et al.,
> 1964: 69).

The popular image of evacuation as a mass of people in flight, while

undoubtedly evocative, has added little to our understanding of evacuation

and it has failed to identify worthwhile research questions. It is comple-

mented by the view of the evacuee as a temporary and involuntary migrant

involved in short distance, non-recurrent, non-instrumental, circular round

trip movement (Cohen, 1974; Ikle and Kincaid, 1956; Haas, Cochrane, Eddy,

1976; Fogelman and Parenton, 1959; Moore et al., 1963, 1964; Hans and Sell,

1974; Ikle et al., 1957). Indeed, the strongest tie of evacuation research

with the general field of migration has centered on the distinction between

voluntary and involuntary movement. Thus, in conceptualizations of evacuation,

the term "refugee" is often used as a synonym for "evacuee".

Future development of the field of evacuation will be marked by a re-

examination of the present day predominant views of evacuation and evacuees,

and of the relation of the field with the study of migration and population

mobility in general. It has proven very difficult to maintain the established view of evacuees. This is so since the items going into the definition shift empirically. Thus, Ikle and Kincaid's strategic evacuation--"the semi-permanent removal of large numbers of urban dwellers to safe areas" in national emergencies, involve some sort of semi-migratory movement. Moreover, the distinction between voluntary and involuntary migration has not had much pay off. Presumably, the most important effect of population movement under force is that there is little selectivity of migrants at point of origin. So far, however, despite a great deal of work it has proved difficult to find examples of forced migration. International refugee movements are a mixture of movement types, and the researchers cannot evaluate the veracity of the respondents' answers as to their motives for moving. It has proven impossible to find other similar migratory streams for purpose of comparison. Perhaps these problems could be alleviated if migration and evacuation and other fields such as tourism and population relocation caused by public projects could be conceived as one substantive field and if analytical rather than common sense differences among subfields could be identified.

A closer integration of evacuation and migration studies is needed, so that the former would gain the technical and mathematical tools of demography and would lose its present insularity in contact with efforts at theory construction by geographers, sociologists and demographers.

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