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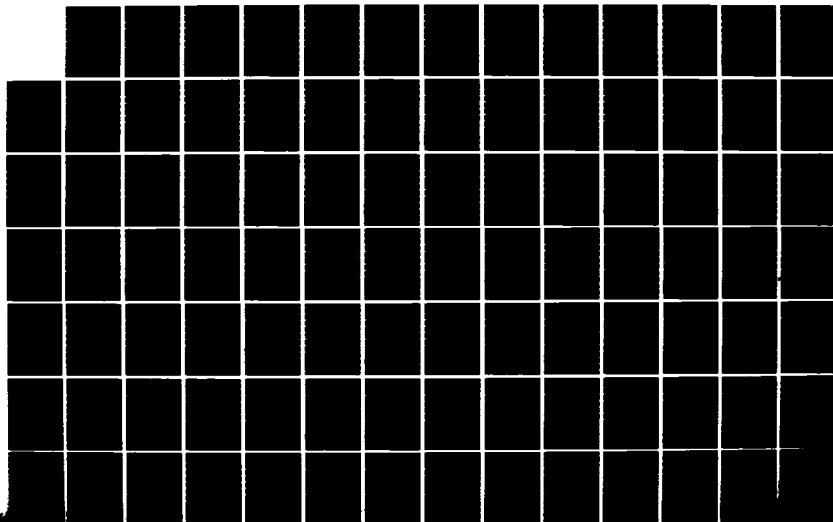
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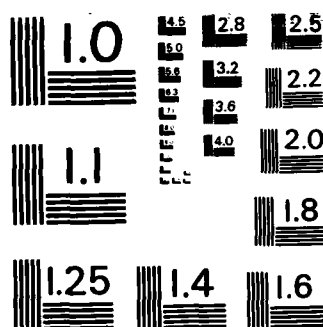
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FINAL REPORT

**BEHAVIOR AND ATTITUDES UNDER CRISIS CONDITIONS:
SELECTED ISSUES AND FINDINGS**

BY

GEORGE OLIVER ROGERS AND JIRI NEHNEVAJSA

WITH CONTRIBUTIONS BY

THOMAS M. LANDRY, VIRGINIA KISSEL, JANET E. CHUMP

RICHARD ANDERSON, AND PATRICIA LOMANDO WHITE

FOR

FEDERAL EMERGENCY MANAGEMENT AGENCY
WASHINGTON, D.C. 20472

CONTRACT NUMBER EMW EMW-C-0736
FEMA WORK UNIT NUMBER 4851A

FEBRUARY 1984

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UNIVERSITY OF PITTSBURGH**

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This research examines the nature and extent of changes in behavior and attitudes which are triggered by the actual and potential occurrence of crisis. Patterned behavior and attitudes, as manifest in daily routine and prevailing attitudes, are disrupted by conditions of crisis not only in response to hazard but in anticipation of potentially hazardous situations. These shifts reflect a human response to conditions of crisis that may be either adaptive or maladap- tive. Adaptive behavior and attitude changes are those that help to minimize,		

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or at least decrease, the threat or insult, if the threat cannot be minimized or decreased, and maladaptive attitude and behavior changes do not, even though they may be so intended.

Existing literature, as it pertains to public attitudes and behavior in America, provides the empirical and theoretical base, on which this research rests. The research design primarily consists of the examination of available research on conjunction with crises. This examination seeks three lofty goals. First, the aim is to inventory the state of scientific information and knowledge concerning attitudes and behaviors in times of crisis, which necessarily compares such attitudes and behaviors to those associated with non-crisis conditions. This objective seeks an answer to the fundamental question: what do we know about behavior and attitudes in crises? And conversely, what do we not know? Second, this research seeks a synthesis of information and knowledge in a conceptual framework whereby one can anticipate, beyond the scope of the empirical evidence, the nature and magnitude of such changes among the body politic. And finally, to identify policy implications as they pertain to emergency planning and preparedness.

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Preface

This report is the final product of the project entitled "Implications for FEMA Programs of Difference in Attitudes and Behavior Under Crisis and Normal Conditions." The entire project was supported by FEMA Contract (EMW-C-0736). Many products of this project have preceded this report. The Crisis Response Conclusion Retrieval Systems (CRCRS) is the most prominent. The CRCRS is a computerized data bank composed of conclusions regarding attitudes and behaviors of the general public along conterminous phases of the crisis continuum. In addition, this database has produced other more narrowly focussed discussions of crisis-related topics. A more detailed description of the CRCRS appears in Appendix C.

Research reports often reflect the combined efforts of many individuals. This report is no exception in this regard. The significance of a computerized system of crisis-related research postulates findings and conclusions led to the conceptualization of the research under the direction of Jiri Nehnevajsa. He guided the overall structure of the concepts as they relate to the crisis process and this report. In addition to the general responsibility for this research, he has written the "Introduction" to this report, "Some Conceptual Elements," "The Crisis Process," and "The Continuity of Normalcy." He has served the other participants in this research both as supervisor and colleague.

George O. Rogers supervised the daily efforts of this project and had primary responsibility for implementing the research design. The chapters attributable to Rogers include: "Types of Crisis," and those chapters regarding the broad topics of behavior in the pre-crisis period ("Behavioral Continuities Under Crisis Expectant Conditions," "Divergent Activity in Periods of Authenticated Threat," "Behaviors in Anticipation of Warning," and "Behavioral Response to Official Warning"). Rogers also accepted the responsibility of producing this report and accepts responsibility for the final chapter on "Implications for Emergency Management."

Other contributions include: Thomas Landry's discussion of "Psychological and Social Perspectives on Crisis" and "Communication Behavior Under Crisis Surge Conditions." In addition, Landry's substantive comments on earlier drafts of this document have contributed greatly to this report and are hereby acknowledged. Virginia Kissel accepts primary responsibility for "Communication Behavior Under Crisis Expectant Conditions" in addition to sustained editorial assistance throughout the report. Janet Chump created the chapter entitled, "The Relationship Between Attitudes and Behavior." Richard Anderson designed and implemented the computer programming aspects of the CRCRS and contributed the "User's Manual" which appears as Appendix C. Patricia Lomando White accepts joint responsibility for "Intentions, Plans and Preparedness" with George Rogers.

Beyond these writing responsibilities, the project has benefited considerably from the computer expertise and guidance provided by Steven D. Manners. His assistance in structuring the database and implementing the CRCRS is greatly appreciated. In addition, we would like to thank the unyielding effort of H. Ann Schmidt, who spent seemingly endless hours in libraries hunting, searching, and abstracting relevant documents in accordance with the search procedures (Appendix B). Finally we would like to acknowledge the assistance of the secretarial staff at UCSUR for their assistance in preparing this report. Christine Bottles organized the preparation effort and typed most of the document. Mildred Asbury assisted the project effort, and Sadye Weiss served the project throughout its duration in an administrative capacity. The collegial nature of this staff brought this research to successful fruition.

1. INTRODUCTION

This study concerns attitudes and behavior under crisis conditions. But such attitudes and behavior are, as it were, anchored in more routine and on-going patterns of sentiments and activities: thus "normalcy" provides a central point of departure and the research focusses on changes which occur in attitudes or behavior or, for that matter, in the strategic relationship between attitudes and behavior when an event sequence, a "crisis," sharply disrupts the "normal" workings of society.

Such terms as "crisis" or "normalcy" have been used in the above cursory statements as if they had altogether self-evident phenomenological referents. They do not. The more precise meanings attached to them throughout this report will, of course, be explained in subsequent sections of the paper (see Chapter 4 on "The Crisis Process").

The research emphasis here lies on attitudes and behavior of the public. And save for minor exceptions, of the American public. By such a delimitation of the study scope, the consideration of organizations qua organizations in their crisis-relevant responses is omitted. The issue, of course, merits attention in its own right, both as regards organizations with direct functional responsibilities for crisis management and mitigation, as well as it pertains to organizations other than those who, nonetheless, must also somehow cope with crisis conditions both in some anticipatory preparedness mode and during a crisis itself.

The existing body of literature, through about the end of 1982, forms the key evidential base by which the conclusions of the study are informed. This rather large pool of information, and indeed often of knowledge, is nonetheless limited to perusal of materials in the English language and even within this broad category of documentation, it is mainly focussing on American data.

The scope limitations of the inquiry, both in terms of time and resources, made it impossible to do justice to non-American and especially non-English-language sources. It would be certainly worthwhile to enrich, refine, and perhaps even modify some of the conclusions of this report by careful consideration of documented experiences throughout the world.

Not all the information and insight contained in the body of literature subject to intensive study is relevant for the research purposes. Rather, the inquiry aimed at identifying in, and then drawing out of the documentation, only assertions regarding attitudes and behavior. Thus, in effect, stated conclusions about attitudes and behavior were at the core of the study evidence.

Any given "conclusion" on the part of this or that author does not

somehow stand in a conceptual, intellectual and empirical vacuum. Taken out of its context, it may lend itself easily to misinterpretation.

- * Every attention was paid to insure that knowledge claims (as conclusions) as they show up in the literature are not stripped of their contextualizations (refinements, qualifications and the like) to avoid the development of findings which might prove to be more caricatures than realistic images of the actual statement(s).
- * Every attention was paid also to make sure that the conclusions used be placed in the fabric of the report from which they originated, while "conclusions" formed the centerpiece of the study's data base, it was necessary to examine each document as a whole and in detail to understand the nature of the implicit knowledge claim.

Each conclusion used as an element in the evidential base in this research then, of course, rests in its own evidential nesting. This permits each conclusion to be taxonomized with a good degree of precision.

1.1 Robustness

In the first place a conclusion may represent a speculation on the part of the author and this means that the assertion is not directly grounded in substantiating empirical evidence nor is it directly (though it might be indirectly) derivable from theoretical premises. Second, it may represent a hypothesis which is a testable, though not (in the particular document) tested, speculation and it is derivable from theoretical or antecedent empirical insights. Third, it may be grounded in a weak empirical base, a characteristic of findings for which the empirical evidence is rather tenuous. This may be due to the nature and/or outcome of sampling (purposive samples; "batches" of respondents rather than samples). It may also be due to the fact that the reported conclusion is only weakly sustained by the evidence, for instance by being only marginally "statistically significant" (say, a low correlation coefficient, the statistical significance of which is driven by large sample size).

Finally, a conclusion may have a strong empirical base: it is generalizable (in light of sampling design and outcome) to some specifiable population and the evidence strongly (in a statistically significant manner) sustains the conclusion against competing hypotheses (including the "null hypothesis" of a chance like outcome).

Thousands of documents were used as the foundation for this study. They were, in effect, identified by a kind of simple "snowball" procedure: starting from most recent and relevant materials, the bibliographies

contained therein constituted the second wave of search with bibliographies of the second wave being the key guide to third wave potential data and so on.

All such documents, save for some that were simply not available nor have become available in the duration of the study, were scrutinized for their relevance for an intensive data search. The "relevant" documents, of course, contained explicit statements about attitudes or behavior under crisis conditions and were, as specified above, speculative, hypothetical, softly or strongly empirical in character. Hundreds of the available documents were "relevant" in this sense. Within the time and manpower constraints, all were subjected to "analysis."

1.2 Search Procedures

This "analysis," first of all, meant the creation of a manual data file of appropriate conclusions "lifted" out of each relevant document. Appendix A, by Nehnevajsa, provides some of the major criteria by which document "relevance" was determined in the course of the research.

Secondly, each such document from which data was drawn was characterized along customary bibliographic lines. Appendix B shows the standard "retrieval" form of information that was used for this purpose. This included the categorization of each document by the type of crisis it may have dealt with, by its methodological as well as theoretical posture, and with reference to the particular crisis stage to which it did, or appeared most to, refer (crisis expectancy, crisis surge, event, aftermath).

Third, each such conclusion was further "simplified" by identifying the key words and, occasionally, simple word sequences, by which the conclusion may be characterized in terms of the concerns of Appendix A (which, to repeat, provides the criteria for "what to look for" without seeking to be exhaustive).

Fourth, the data file was computerized with a view to maximum flexibility in information retrieval. Appendix C is a simple version of a "user's guide" which also explicitly indicated the "key words" that were employed in the abbreviated taxonomization of each conclusion as well as the ways by which the data, or the document as a whole, might be retrievable.

Appendix D gives a brief summary of the relationship between the overall identification of potentially relevant documents and the ones that were actually subject to intensive study.

The computerized bibliography as a whole is provided as Appendix E and it represents an output of the whole research team.

1.3 A Substantive Example of the Use of The CRCRS

One substantive issue the computerized inventory of conclusions is able to address involves the potential for adaptive and maladaptive evacuation in response to crises of limited forewarning. The issue is contingent upon the idea that in crises of limited or no forewarning there will not be enough time to respond effectively. When warning time becomes extremely limited, the onslaught of the disaster itself might well take place in the midst of the response. To the extent that crisis planners rely on evacuation and relocation as the principle means of dealing with imminent hazards, we must recognize the circumstances under which evacuation would not be recommended.

The first step in using the Crisis Response Conclusion Retrieval Systems to analyze such an issue involves the translation of the policy and corresponding research problem into appropriate (computer recognized) series of search(es). This translation often defines the conceptual framework within which the "answer" is to be obtained. In this case, based upon what we already know, we must first identify a set of disaster types that sufficiently represent crises likely to be of limited forewarning. For this case, we form a set of conclusions concerning responses to disasters that are typified by limited forewarning.

Set 1: Disaster Type - blackout, bridge collapse/damage, earthquake, explosion, flashflood, shipping accident, tornado

Second, the particular behavior we are interested in may be characterized as evacuation.

Set 2: Descriptors - evacuation

One concern is that people might evacuate after the event has begun and either be at greater risk of injury or rescue personnel needed immediately after the event may be less available. Because of this, a third set may be formed that includes only conclusions regarding the response to crises in the event phase.

Set 3: Phase - Event

The conjunction of these three sets and determining the kinds of conclusions that are available in the CRCRS, we find that neither situation is cited. Therefore, we might tentatively conclude that evacuation, in response to crises of limited forewarning, is not a typical occurrence. However, evacuation in such situations does appear to help in several other contexts--such as in effectively dealing with secondary and higher order effects and in the availability of rescue assistance from the variety of people who converge on the disaster site.

The CRCRS allows researchers and policy makers alike the flexibility to determine the kinds of problems that are "real" and the areas where issues raised by the "naive" observer may be recognized and dealt with effectively. In this case, the apparent issues become non-problematic, while other apparent position aspects are highlighted.

1.4 Overview

The remainder of this report is roughly divided into five major sections. The first section seeks to clarify the conceptual approach. The first chapter in this section, entitled "Some Conceptual Elements" elucidates the nature of the relationship among the many terms associated with work pertinent to crisis situations, disaster, and emergency preparedness. The second chapter entitled "Types of Crises" is directed at the various kinds of crises that are likely to be experienced. The underlying theme is one of clarification of the types of hazards, their similarities and differences in terms of how they can be mitigated, and the likely public response. The concepts of forewarning and source of danger and responsibility for hazard are included. The third chapter in the section, entitled "The Crisis Process," attempts to clarify the nature of the crisis process used throughout this research. The aim here is to discuss the nature of the relationship and trajectories that impending crisis may take. These chapters form the conceptual foundation for the examination of attitudes and behavior under crisis conditions.

The second section clarifies the theoretical underpinnings of the work in two major bodies of literature. First, Chapter 5 discusses some psychological and sociological contributions to the area of stress. Entitled, "Psychological and Social Perspectives on Crises," it examines the concept of stress from the psychological perspective and upon that background analyses the manner in which this psychological stress is manifest in group emergency situations. The second chapter of the theoretical section explores "The Relationship Between Attitudes and Behavior." This chapter reviews the extant literature on the degree and conditions under which attitudes and behavior are linked.

The third section examines the normalcy conditions from which individuals respond to crises. The first chapter, entitled "The Continuity of Normalcy" studies the nature of the everyday routine and how they are transformed in response to crises. The second chapter of the section, entitled "Intentions, Plans and Preparations" highlights the nature of the existing plans and intentions of the public and how they are likely to affect the public's response to crisis.

The fourth section discusses the nature of communications behavior in crisis situations. The first chapter of the section entitled "Communication Behavior Under Crisis Expectant Conditions," analyzes the nature of the cues

of impending danger. Observations, information, and signals that imply danger to the general public, and what they communicate to others concerning these cues are included. The second chapter of the section, entitled "Communication Behavior Under Crisis Surge Conditions," examines the nature of official warnings and how they are communicated in the surge period. These two chapters taken together investigate the nature of the communication behavior in the pre-crisis periods of expectancy and surge.

The fifth section addresses the nature of continuing and discontinuing activity in the pre-crisis period. The first chapter entitled "Behavioral Continuities Under Crisis Expectant Conditions," concerns some of the pertinent issues associated with the nature and magnitude of disruption of routine activities as clues of impending danger emerge. The chapter focuses upon the nature of activities as the public responds to the clues of impending danger in the crisis expectant period. The second chapter entitled "Divergent Activity in Periods of Authenticated Threat," explores the nature and degree of continuing and discontinuing activities in the surge period of crisis. The chapter examines the degree of behavioral change as the threat of impending danger is authenticated. Both chapters anticipate many of the types of activities in which the public is likely to engage during the pre-crisis period.

The sixth section consists of two chapters on nascent activities in response to the impending crisis. The first chapter, entitled "Behaviors in Anticipation of Official Warning," addresses the public's tendency to engage in specific kinds of activities in response to any clues of impending danger. The second chapter, entitled "Behavioral Response to Official Warning," concerns the manner in which people engage in protective avoidance activity in response to authenticated warning. These two chapters focus on the behavioral response to the impending crisis.

The report concludes with a summary chapter of "Implications for Emergency Management."

2. SOME CONCEPTUAL ELEMENTS

As is the case with many concepts in relatively rapidly changing scientific and intellectual contexts, the existing body of literature is fraught with a variety of usages of terms like "risk," "hazard," "danger," "threat" and such others.

No attempt is made here to provide a critical evaluation of such alternative uses of various crucial concepts. The findings of this report must remain anchored in the literature itself along with its less than precise terminology. There is value in seeking to clarify concepts as they pertain to the broad delineation of the study scope. In addition, this would enhance the possibility of a more standard usage of these terms.

In these respects, the concept of hazard is quite central. It refers, for these purposes, to any process or state of affairs which entail danger. Such processes, of course, may be human activities, functioning of technologies (which always also involves human activities), or the dynamics and pulsations of nature.

Danger, in turn, is defined by harm. This may be harm to life, health, institutions of society, property, or environments.

Concepts like death, disease, injury provide specifications for harm to life and health. The notion of damage refers really to institutions and property: at the extreme, not unlike the death terminality with respect to human existence, breakdown may represent the maximum institutional damage, while destruction has to do with maximum property damage.

Thus, if any hazard is defined in terms of danger(s) associated with "it" (here in parenthesis, since this requires further explanation) and danger is defined as harm, then increasing specificity of hazard delineation has to do with the nature of the harm as has been briefly sketched out above.

For any activity or state of affairs to be recognized as hazardous. The danger(s) associated therewith have to be recognized and identified. and such danger(s) are identified and recognized in terms of the harm(s).

One important conclusion is: the identification and recognition of some activity or situation implies some non-zero probability, no matter how negligible, of danger--and thus, definitionally, of the harm(s) that themselves concretize the danger. This is not an appropriate occasion to undertake an analysis of human propensities to expose others or their communities or even societies to harm or even to deliberately inflict harm upon them. Suffice it to say that with this goes an altogether panhuman characteristic, from which only a few genuine extreme

masochists might deviate, to be adverse to harm to self and, generally or even more so, to one's "loved ones" whoever they may be.

Thus harm has essentially a universal negative connotation, as representing a situation or an outcome of processes which one prefers to avoid if at all possible, while an organization seeks to avoid, and societies prefer to avoid.

All hazards, by definition, involve the potential for harm. The potential, of course, is realized to varying degrees if the hazard were to actualize. Harm avoidance sentiments robustly dominate the willingness to be harmed not to speak of preference for being harmed. It would then seem a simple matter to conclude that doing away with hazards, or at least minimizing the harm associated with hazards that cannot be prevented, "ought to" be the dominant human preference.

This is, however, not necessarily so: while harm(s) delineate hazards and harm(s) are negatively evaluated for self-evident reasons, the implicit calculus gets to be quite complicated: most human activities involve one hazard or another; all technological processes entail some hazard or another; and nature, in its own wisdom, lends itself only to limited control anyway.

But there are significant benefits to be derived from activities, processes as well as nature's proclivities and not only the built-in harm(s). Thus it is necessary to postulate a kind of primitive, though due to advances in science, ever improving calculus of cost-benefit relations which counteracts, in its outcomes, the endemic preference for harm's avoidance. The issue becomes one of trade-off between the potential harm one might be willing to absorb and the benefits which result from the willingness to "put up" with this or that hazard.

In simple terms: some 50,000 annual highway fatalities, hundreds of thousands of injuries, or even hundreds of millions of dollars of property damage associated with the "use of the automobile" do not induce public policies, or pressures toward public policies, to "do away" with the automobile, though pressure to enhance safety by a variety of social provisions (speed limits) or technologies (inflatable cushions; seat belts) may be strong and even induce public policy decisions (which may often be more symbolic than grounded in an understanding of the actual relationship between the preventive measure and the hazard harm reduction).

And then, of course, there are significant numbers of people who choose to "cater to danger" (and thus rather "like" particular hazards without at all "liking" the harm that might result). Chauncey Starr's differentiation between voluntary and involuntary "exposure" to (what he termed) risk (here = hazard) (as presented in his article in Science

165:1232-1235, entitled "Social Benefit Versus Technological Risk" in September, 1969) remains poignant despite subsequent criticisms pertaining to the inherent mushiness of the definition of what is "voluntary" and what is not.

There are some hazards to which people are willing to expose themselves clearly on a voluntary basis, and if there are many circumstances where the definition of "voluntariness" is problematic, it does not alter the major thrust of Starr's conclusions with regard to such clearly and obviously self-chosen exposures to potential hazards (and thus to the harms associated with the hazards). Be it skiing, motorcycle or car racing, mountain climbing, sky diving, joining a mercenary military force and many similar situations, there is no problem in defining such activities as involving hazards and, at the same time, being entirely of the individual's choice.

Such revealed preferences for self-selected hazardous activities are, however, not tantamount to a desire for, or even acceptability of, harm(s) associated with the hazard(s). At the behavioral level, acquisition of skills and competencies appropriate for the reduction of the prospects for harm become the central coping dynamic. At the level of sentiments, quite often beliefs in personal luck (itself a complex term) perform a similar coping function.

In effect, all hazards acquire their lexical labels from actual or presumed circumstances and agents which, in turn, drive the harm(s) associated with such labeled hazards. These labels often come to be also used in scientific discourse which is not necessarily to the greatest benefit of knowledge advancement.

Thus "earthquakes" represent a hazard though the label clearly does not go to the roots of the known or postulated geophysical forces which themselves occasion the labeled phenomenon called an "earthquake." The hazard embedded in "driving an automobile" is an "automobile accident," a term generously applied regardless of whether the event itself results essentially from an "uncontrollable" malfunction of some significant subsystem of the equipment, or from human error, or even by deliberate action.

In other terms: actualized hazards, or those for which actualization has a clear designation, generate a lay--and, perhaps unfortunately, scientific as well--labeling of particular classes of hazards.

"Meltdown," for instance, serves as a good example of a hazard in the operation of nuclear power plants and it may be often subsumed under the broader notion of "nuclear power plant accident" (though that notion entails hazards other than "meltdown" as well). This type of a label becomes

illustrative of a hazard which is imminent, or actualizable, in the activity (in the technology-and-human activity) itself even though no "meltdown" has yet occurred.

"Nuclear war" represents another such hazard because its potential lies in the existence of nuclear weapons technologies (and the actual stockpiles of deliverable weapons) and in the functioning of the international political-economic system of the world (or better yet, in its more basic malfunctioning). Here too, the hazard is plausibly actualizable though humankind has never yet experienced a "nuclear war." (The nuclear weapons used at Hiroshima and Nagasaki at the end of World War II notwithstanding.)

By contrast, hazards with labels such as "hurricanes," "volcanic eruptions," "droughts," "automobile accidents," "cancers," "epidemics," are all grounded in actualized processes for which the terms stand generally as convenient shorthand.

If specific hazards are labeled as a function of events and situations the occurrence (actualization) of which entails the harm(s) associated with such hazards, it remains altogether useful to cluster hazards-as-labeled in terms of the primary postulated (or known) causal agent.

The key distinction between natural and man-made disasters remains a worthwhile one. However, it may facilitate many discourses if the term disaster was reserved for hazards in which the forces of nature were the strategic causal agent, and the term catastrophe was used for all types of man-made hazard actualizations.

Similarly, the term calamity might be worth deploying for both disasters and catastrophes (that is, more conventionally, for both "natural" and "man-made" disasters).

There are two classes of conditions under which actualized, or potentially actualizing, hazards would then be labeled as disasters. One condition has to do with knowing that forces of nature themselves, the dynamics of the universe as it were, are at the "roots" of the event's causation. The second condition is somewhat imprecise: the term disaster is also applicable for those natural hazards, if actualized, where man's activity on this planet may itself form the "roots" of the behavior of the forces of nature but the current state of knowledge is too uncertain or even non-existent to determine that.

In other words, some events now referred to as disasters may well be catastrophes (in their man-caused sense) but as long as this is not known with a reasonable degree of certainty, they remain defined as "natural" events.

Thus at least some earthquakes, to give an example, may "really" be caused by man's activity on the planet. Definitionally, they would then be labelled catastrophes rather than disasters--if the taxonomical distinction previously made is allowed. But unless it is, or becomes, known with some viable degree of scientific evidential backing that such are the sources of these earthquakes, it is still relevant to call earthquakes disasters.

Of course, some disasters may also trigger catastrophes: an earthquake which would lead to the collapse of a dam (the collapse of which "by itself" would be of the catastrophe variety because of the man-madeness of the dam) amounts to a disaster "causing" also a "catastrophe."

A catastrophe, of course, may also "cause" yet other, secondary catastrophe(s). An "explosion" (wherever it may occur) with its own harm characteristics may well trigger fires (or other explosions and their attendant effects) beyond the actual explosion's (geographic) domain, and temporarily subsequent to the initial event.

At the same time, it follows from the definitions and not as a substantive conclusion that catastrophes cannot cause disasters. If, say, nuclear war were to lead to hazardous ozone depletion in the atmosphere and this depletion induced other harmful consequences for life, health, property, environment or the like, then this presupposes that there is a known, or postulated, link between ozone depletion and similar hazards so that the issue reverts to one catastrophe including yet another one, or many of them. All such subsequent events then are actually man-induced and this places them into the lexical category of catastrophes. In other words, the "forces of Nature" would not behave the way they do were it not for the particular and specifiable human intervention. Thus, in principle, if man is the source ("cause," "agent") of a particular hazard actualization, (s)he is also the source of the actualization of all hazards triggered by the initial one, to the extent to which there exists some knowledge about the relationship between the "trigger" hazard and hazards potentially embedded therein.

Associated with each hazard is a probability of its actualization. Better yet: since most hazards may vary in severity (or magnitude) of the calamity which ensues if the hazard were to actualize, there exists, at least implicitly if not in explicit form, a probability distribution of actualization over the distribution of hazard magnitudes. Thus the idea of, for example, a 100-year flood simply indicates that a flood of that magnitude is likely to occur, on balance, but once in a hundred years--thereby having a probability each year of about .01.

These hazard actualization probabilities may be referred to as threat or, for that matter, threat levels. Threat then stands for the probability that a given hazard of a specified magnitude (severity) will be actualized within

some specific unit of time (generally, per year estimates tend to form the baseline in the assessment of threat).

The term risk has come to be quite generally applied to threat as the latter concept is utilized here. But in the context of such usage, it is important to recognize that this has to do with risk of hazard actualization and not, without further refinements, to the harm which may result if the hazard is actualized.

Indeed, contingent on the actualization of a hazard, there exists a probability distribution of danger(s). For each danger characterizing the possible insult occasioned by an actualized hazard (that is, a calamity) the probabilities may differ, and they generally do: probabilities of death, probabilities of injury, probability of property damage and so on. Except for the probability of death which represents a unique and particular outcome possibility, other danger probabilities are themselves distributions in that they vary as a function of the severity of the specific danger: the severity of injury or illness, the amount of property damage and the like.

The danger outcome(s) of a calamity are then, in effect, a joint probability of hazard actualization and of the specific danger probability itself.

If threat then stands (terminologically) for likelihood of hazard actualization (and thus the occurrence of a calamity--whether a disaster or a catastrophe), danger stands for the probability of the actualized hazard's insults to life, health, institutional functioning, property or environment.

Actualized danger upon the actualization of a hazard is then, of course, what has been termed harm and this, in turn, takes forms such as those of death, injury, illness, damage, breakdown in the sense in which these concepts were introduced previously.

Thus to sum up the central theme quite succinctly: A calamity is an actualized hazard. A harm is an actualized danger associated with a calamity. Probabilities are not associated with actual states of affairs or actual events: thus a particular calamity does or does not occur at a given time; a particular harm is or is not incurred given the calamity.

Probability distributions are, however, altogether relevant with respect to hazards as well as with regard to dangers. The probability of danger actualization may now be defined as insult. As always, there exist two fundamental ways to manipulate such separable probabilities and probability distributions.

Thus the joint probability of threat and insult may be, perhaps, identified terminologically as peril.

In turn, the probability of insult given threat, and therefore a conditional probability, establishes the most relevant definition of risk.

Actualized danger (given actualized threat--a calamity of one kind or another) results in harm.

Insult probabilities then are the ex ante estimates of each plausible type of harm.

One dimension of harm as actual outcome of a calamity, and therefore also of forecastive mode of harm assessment in the form of insult probabilities, has already been briefly touched upon: it has to do with the type of harm (or its probabilities) in terms of death, injury, illness, and so on; and these concepts, too, (save for death) require concretization as to the kind of injury, illness, property damage, environment damage or, for that matter, institutional breakdowns and also of the severity/magnitude of each such specific outcome. Indeed, even the death outcome as it relates to harm due to a calamity may be further refined as to the (medically) most direct causes of death.

A second dimension of the harm outcomes and of the insult probabilities of such outcomes merits some sketchy consideration. It, too, may clarify some concepts which have often been used interchangeably though they probably should not be. It is, so to say, the time dimension of harm outcomes and of outcome probabilities.

Along these lines, it is useful to think of the outcomes of a calamity (or outcome probabilities associated with calamity forecasts) in terms of primary, secondary and tertiary.

The concept of impact is most appropriate for the primary outcomes: this then has to do with harm which occurs, or is predicted to occur, as a function of the calamity event or process itself. Directness, suddenness, and immediacy are then built-in definienda of a calamity's impact. The term effects, by contrast, might be best preserved for those harms which are not of the trans-calamity but immediate post-calamity character.

In many calamities in which rescue and relief activities are the immediate aftermath of the calamity event/process itself, the notion of effects of the calamity may thus be conceptually best bounded by the duration of such activities.

Finally, the concept of consequences seems most valuable when used for longer-range outcomes of a calamity, wherein the "longer-range" horizon has as its lower boundary the time range, somewhat fuzzy though it may be, when rehabilitation or reconstruction following the event and the immediate rescue and relief actions begin.

Conceptually, impacts, effects, or consequences need not be only harms. Some might be benign though it is hard to think of benign impacts of a calamity. As has been implicit throughout the previous discussion, the umbrella term for impacts, effects as well as consequences is outcomes (of the calamity, in this instance).

Thus some hazards may entail only consequences as harmful outcomes: this is due to the fact that there is no identifiable "event" that serves to delineate the trans-calamity period, nor is there any "rescue and relief" activity so that the notions of impact or effect, as used here, are simply not appropriate.

In illustrative terms: smoking x cigarettes a day does not impact the smoker nor are there, in this terminology, effects. Rather, such harms as lung cancer are a consequence of smoking over some extended period of time and the harmful outcome, the lung-cancer consequence, is itself a "longer-run" harm.

Exposure to low level radiation may well have no immediate effects: there is no impact. But there seem to be, or are likely to be, delayed and long-range consequences, none of them benign. Further important interplays among the outcomes concepts are not subject to analysis here: this merits some attention in its own right.

How does the concept of a crisis fit into all this?

A crisis then occurs when peril and risk reach such magnitude as to trigger immediate actions oriented to coping with the circumstances should the hazard actualize, that is, become a calamity. These are actions to (a) prevent the hazard from actualizing (and thus reducing its threat = probability of becoming a calamity); (b) to minimize insult (and thus reducing the harm should the calamity occur anyway), that is, to minimize impact, effects and consequences probabilities even if the actualization of the hazard cannot be avoided or efforts to do so fail.

To such "immediate coping actions," in their ex ante manner, the term emergency actions is most applicable; the substantive thrust of the actions (effort at calamity prevention and/or harmful outcomes mitigation) in its organized and organizational format may be properly termed emergency management, a concept appropriate in this context whether it pertains to individuals, families, neighborhoods, communities, counties, states, regions, or the nation as a whole.

A crisis then causes emergency actions and the activation of emergency management operations. Such emergency responses then serve as the phenomenological evidence of a crisis.

Now a crisis was also referred to, in its definition, in terms of "peril and risk reaching such magnitudes as to..."

The very idea of "reaching" any particular magnitude of anything implies a change in magnitude from some prior period to a subsequent one, or over time. This is, indeed, the intended thrust of the definition. The issue merits some further explanation since it is an important one.

A sudden increase in threat level, as perceived, represents one key dynamic by which "normalcy" changes into a "crisis." Since probabilities of a calamity are never "real" in the sense that they all are driven by the kinds of epistemologies that get used in their derivation--something that applies to expert as well as lay estimates, though not in the same manner--it is the perceptions of actualization probabilities that are at the core of "normalcy" as well as "crisis" descriptions of reality.

Such sudden changes in threat then are also unexpected ones since all anticipatable events will normally have been absorbed in the initial normalcy-driven probability estimates. So it is events which are not explicitly embedded in the threat estimations, or whose timing cannot be explicitly encompassed in such estimation, which may induce the crisis situation.

The second key dynamic has to do with the cumulative implications of trends of threat. Thus when hazard actualization probabilities are, or seem to be, increasing some threshold of peril (joint probability of threat and insult) must be reached at some point so as to induce the postulated emergency actions and activities of the emergency management variety.

But even in this instance, the normalcy-to-crisis shift is a rather abrupt one due to the postulated threshold: peril magnitudes "just below the threshold" would not "yet" trigger emergency responses, but peril levels "just above the threshold" would.

Thus, for example, the Weather Bureau's announcement of a "tornado watch" has to do with the fact that "normalcy" or more "normal storm" conditions have passed the threshold to the point where circumstances exist in which the occurrence of tornadoes (in a certain area) has become "quite probable." The emergency response becomes one of becoming more alert to the likely actualization of the threat. By contrast, a "tornado warning" represents yet another threshold, one in which a "tornado" has been actually "sighted" and its predicted, if rather broad, pathway over some time period defines the zones of sharply enhanced peril, and, of course, of risk.

In some fashion, attitudes and behavior must undergo changes under crisis conditions relative to "normalcy" or non-crisis.

This rather robust conclusion follows directly if one is willing to accept the premise that the phenomenological manifestation of crisis conditions is some form of emergency response, individual, collective, organizational.

Such responses, to repeat, involve actions oriented to the crisis and, of course, to its possible culmination of the actualized hazard, the calamity.

Such actions must involve human energy, time, as well as other resources. And this can mean only one of two things and usually means, though differentially for different individuals or organizations, both.

For one, some energies, time and other resources come to be reallocated for the crisis period from their "normalcy" deployments. And this, of course, represents a change, and usually a significant one, in the dynamics of normalcies.

Second, some untapped energies, time otherwise used, or resources not otherwise already in full use must come into play. This, too, represents a drastic shift from normalcy in which some (human) energies may remain "stored," in which some time may be "wasted," and in which some resources are simply unused or deliberately preserved for some "future" use.

This study then explores the emergency responses as changes in attitudes and behavior on the part of the body politic which are triggered, of necessity, by the occurrence of a crisis. The words "of necessity" here should not be misunderstood: changes in attitudes and behavior are necessary, but the form which they take may vary and there is no assumption, at this stage, that behavioral or attitudinal changes--even as they are compelled by the need to orient some part of extant, or superfluous, energies to crisis-related emergency response--are actually "effective" in coping with the hazard actualization threat or with the calamity, that is, when the hazard does actualize. So there is much room for the consideration of both adaptive and maladaptive changes, with the former having to do with attitudes and behavior which help to minimize, or at least decrease, the threat or the insult if threat cannot be minimized, or decreased, and the latter which do not.

3. TYPES OF CRISES

3.1 Introduction

The general public responds to various types of hazards in dissimilar ways. Certainly the public response to a tornado is different from their reaction to air pollution. Manifest in the perception of risk is the type of risk or the profile of risk it represents (cf. Lowrance, 1976). The fundamental purpose of any taxonomy is to develop, define, and employ a set of variables to be utilized in the description of a set of phenomenon. Through the application of these variables a higher order of abstraction is obtained.

3.2 Crisis Events

The main crisis "events" considered, from the beginning of the research project (cf. Nehnevajsa, 1981, "Workplan" Note 3), are listed below in alphabetical order:

- | | |
|-----------------------------------|------------------------------------|
| 1. Air pollution | 27. Hostaging |
| 2. Animal disease epidemics | 28. Hurricane |
| 3. Assassinations | 29. Landslide |
| 4. Avalanches | 30. Mining accident/disaster |
| 5. Aviation accidents | 31. Nuclear (power plant) accident |
| 6. Blackout | 32. Nuclear attack/war |
| 7. Bombing | 33. Oil spill |
| 8. Bridge collapse/damage | 34. Pest epidemic |
| 9. Building/construction collapse | 35. Railroad accident |
| 10. Crime | 36. Riot |
| 11. Crop failure | 37. Shipping accident |
| 12. Cyclone | 38. Snow/ice storm |
| 13. Dam failure/damage | 39. Subsidence |
| 14. Disease epidemic (human) | 40. Subway accident |
| 15. Displacement of persons | 41. Terrorism |
| 16. Drought | 42. Tornado |
| 17. Earthquake | 43. Tunnel accident |
| 18. Energy crisis/shortfall | 44. Typhoon |
| 19. Explosion | 45. Toxic fumes, spillages |
| 20. Famine | 46. Toxic waste leakages |
| 21. Fire/firestorm | 47. Tsunami |
| 22. Flash flood | 48. Volcanic activity |
| 23. Flood | 49. War |
| 24. Food poisoning | 50. Water pollution, toxic |
| 25. Hail | 51. Water shortage |
| 26. Highway accident | |

The literature search generated six additional crisis event identifiers. They are 1) natural disasters in general, 2) chemical hazards, 3) industrial accidents, 4) biological war, 5) chemical war, and 6) conventional war. In some respects this events list is redundant, for example, cyclones and typhoons are simply hurricanes that occur in different parts of the world. Furthermore, there are direct and indirect relationships among the events. For example, terrorism may involve hostageing and bombing, drought may lead to famine, hurricanes may induce floods, dam failures may result in a particular kind of flashflood, and so on. While the precise distinction between certain types of risk may be ambiguous, the objective was to develop a taxonomy of these events to insure that crisis events in each group were comparable.

3.3 On a Taxonomy

By making explicit the crisis events, the scope of the research is also delineated. The objective is to partition these events so the arranged groups may be described with regard to their underlying profile or character. The predominant (and simple) criteria for establishing types of crisis has been to distinguish "natural" from all other crisis (cf. Lowrance, 1980; Nehnevajsa, 1981, "Workplan" note 3; Rowe, 1977 and Kates, 1978). Emergency management for natural crisis events tends to place the emphasis on "channelling" the forces of nature. Natural disasters portrayed as "acts of God" have been used as "baseline" guides in risk assessments.

3.4 Natural Disasters

This major category of crisis events is generally referred to in the literature as a "natural disaster" or the "natural hazards" category (cf. Table 1). Within this category are eighteen specific crisis which may be further classified to reflect their basic profile. Earthquakes, landslides, volcanoes, and, in some sense, tsunami are sudden events with little tactical warning--i.e., there are very few clues to the existence of the hazard except an official warning when the hazard is imminent. Tsunami, depending on the relative distance between the "epicenter" and the geographical area "at risk," has a more variable warning time, but is included in this group due to its origin in the shifting of land masses. Hurricanes, cyclones, typhoons, snow and ice storms, hail and tornadoes are all a part of the weather system. Unlike the land mass crises above, these crisis are characterized by a relatively slow onslaught that is to some extent observable, and thus a certain degree of tactical warning is both possible and likely. Severe weather in the form of hurricanes, typhoons and cyclones may be observed in their approach, at least by modern technological advances such as satellites used for monitoring weather systems. However, in the case of hail and tornadoes, the approach of the system known to produce severe weather is insufficient for the determination of hazard likelihood. For

example: If a hurricane is approaching a specific geographical area, the likelihood of hazard actualization is relatively high. On the other hand, the approach of a tornado-producing weather system does not necessarily mean a particular geographic area will be adversely affected, although it may be so affected--i.e., the likelihood of crisis actualization is less certain. Another group of natural hazards consist of crises generated by surface activities--i.e., the movement of water, snow and ice on the earth's surface or fire. Floods, flash floods, avalanche, fire and fire storms comprise this category. Fire and fire storms appear different from the other surface activity crises. The variance rests with the origin of the fire--i.e., human-caused fires suggest an other than natural disaster characteristic. This once again points to the association of crises. These hazards are distinguished by a somewhat varied onslaught, which is to some extent situation specific. The final set of natural disasters are climate induced disasters consisting of water shortage, drought, crop failure, and famine. These crisis are more or less "evolutionary" in terms of onslaught--i.e., they evolve over a long period of time.

3.5 Technological Crises

This major category of crisis events may be perceived as technological crises, as they represent the failure of technological systems (cf. Lowrance, 1980; Tuller, In Press; and Hohenemser, et al., 1980). In addition, technological crises are clearly generated by active human interaction with the environment. To further define their profile, the eleven specific crises in this category are grouped into four basic sub-categories (cf. Table 2). Nuclear power plant accidents, blackouts, and dam failures are crisis events stemming from large-scale technological system failures. They reverberate a profile that is catastrophic, sudden, and geographically concentrated. These crisis events are also similar in that they, when actualized, affect large numbers of people. Structural failures, such as a bridge or building collapse, are catastrophic and sudden but affect fewer people and are more concentrated than the large-scale technological system. Another group of technological crisis, including air and water pollution, and energy crisis or shortfall, are low-level delayed effect crises. These crisis events are contributed to in (usually) small amounts over long time periods. They are diffuse over wide geographic areas, which can reach the global level, and usually are characterized by delayed or widely unrecognized effects. Chemical hazards, including toxic fumes, spills and waste, and oil spills, comprise the final category of technological crises. Chemical hazards may be considered catastrophic, more or less geographically concentrated, sudden, and potentially affecting large numbers of people. However, in comparison to large scale technological system failure, they are not the result of large-scale technology, at least not in the same sense.

3.6 Discrete Accidents

This major category of crisis has been referred to in the literature as discrete small-scale accidents (cf. Lowrance, 1976 and 1980). These crises are discrete in the sense that they (usually) have obvious beginnings and endings, even though the consequences can be permanent. We have chosen to drop the term "small-scale" so as not to under-emphasize the importance of this class of hazards. Discrete accidents are in general terms well understood. Because accidents usually recur, this class of crises has a "numbing" effect. People are accustomed to these hazards and therefore tend to underestimate their magnitude. For the purpose at hand, these accidents are partitioned into two groups transportation accidents and industrial accidents. The transportation accidents consist of aviation, highway and railroad accidents, shipping, subway and tunnel accidents. The industrial accidents are comprised of mining accidents and explosions (cf. Table 3).

3.7 Socio-Political Disruptions

In the shift from natural and technological crises and discrete accidents to socio-political disruptions, the primary adjustment is from an accident or incidental crisis to a purposively injurious crisis. In effect someone (or ones) is purposely attempting to injure another person(s). We have divided these crises into two sub-categories. The first, war, usually refers to international conflict, but is also associated with revolutions and intranational conflicts as well. War frequently involves differing ideologies, the widespread destruction of property, and injury and death. Most often it is the (or a part of) the culmination of a long embattled opposition to one another, or particularly antagonistic acts. For the purpose of this research, war includes bombings. Also the distinction is made between nuclear, biological, chemical and conventional wars and warfare. The secondary subcategory is a residual category that includes more isolated events that may or may not be directly associated with wars. It includes assassinations, crime, displacement of persons, hostageing, riots, and terrorism (cf. Table 4).

3.8 Epidemics and Diseases

The final category consists of epidemics and diseases. These crises can be related to humans, animals, or pests. Furthermore, we have included in this category food and drug poisoning crises. One of the major differences lie in the contagion effect of disease as opposed to the "source only" effect of food and drug poisoning. All may be diffuse or not geographically constant. Also epidemics and diseases can be sudden and envelope society quickly depending on the nature of the specific case (cf. Table 5).

3.9 Summary and Implications

The source of the potential crisis and the amount of possible forewarning are the fundamental characteristics of this taxonomy. For the purpose of identifying attitude and behavior trajectories in crisis situations as they emerge, this kind of taxonomy represents the major distinctions requisite among disasters and emergency. Policy makers in developing plans or preparations for emergencies need to be sensitive to these distinctions and strive for an integrated emergency management system. By exemplifying the major dimensions of the types of crises, our analysis can better address specific issues relevant for emergency managers at the policy making level.

Specific emergency plans cannot and should not be expected to address the range of emergency issues for all hazards. However, preparation for one hazard may partially enhance the emergency preparedness posture for other hazards. It is by placing our analysis of behavior and attitudes in the context of specific kinds of hazards, as specified in the mitigation and preparedness terms, that public policy may best take advantage of tendencies of the general public to support and/or act in this regard. Using this approach, this research addresses the emergency plan required to serve for all hazards. That is identifying the similarities and dissimilarities among the various hazards to enable effective adaptation to an all hazards emergency management approach. In addition this taxonomy allows the research to identify any similarities within emergency preparedness plans for all hazards. It is in this way that parallel functions may be central to all hazard emergency plans and thereby reduce the associated duplication which would result otherwise.

Table 1: Natural Disaster Crises

<u>Landmass Crises</u>	<u>Weather Crises</u>
Earthquake	Hurricanes
Landslides	Cyclones
Volcanoes	Typhoons
Tsunami	Snow & Ice Storms
	Hail Storms
	Tornadoes
<u>Surface Activity</u>	<u>Climate Induced Crises</u>
Floods	Water Shortage
Flashfloods	Drought
Avalanche	Crop Failure
Fire	Famine
Fire Storms	

Table 2: Technological Crises

<u>Large-Scale Technological Systems</u>	<u>Structural Failure</u>
Nuclear (Power Plant) Accident	Bridge Collapse/Damage
Blackout	Building/Construction Collapse
Dam Failure	
<u>Low-Level, Delayed (Effect) Crises</u>	<u>Chemical Hazards</u>
Air Pollution	Toxic Fumes, Spillages
Water Pollution	Toxic Waste, Leakages
Energy Crisis/Shortfall	Oil Spills

Table 3: Discrete Accidents

<u>Transportation Accidents</u>	<u>Industrial Accidents</u>
Aviation Accidents	Mining Accident/Disaster
Highway Accidents	Explosions
Railroad Accidents	
Shipping Accidents	
Subway Accidents	
Tunnel Accidents	

Table 4: Socio-Political Disruptions

<u>War</u>	<u>Other Socio-Political Crises</u>
Bombing	Assassinations
Nuclear War	Crime
Biological War	Displacement of Persons
Chemical War	Hostaging
Conventional War	Riots
	Terrorism

Table 5: Epidemics and Disease

Animal Disease/Epidemic
 Human Disease/Epidemic
 Pest Epidemic
 Food/Drug Poisoning

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4. THE CRISIS PROCESS

Chapter 2 "Some Conceptual Elements" addressed a fairly precise, if really qualitative rather than quantitative, definition of a crisis. This had to do with the notion of peril and risk reaching such perceived magnitudes as to induce emergency actions.

Chapter 3 "Types of Crises" has dealt with some of the salient taxonomical problems dedicated to efforts to cluster specific crises both to enhance parsimony in terms of emergency management. In so doing, to approach the development of categories within which the hazards are more homogeneous by relevant dissecting or analytic criteria into which a hazard, the crisis which it may precipitate, and the calamity which its actualization occasions can be decomposed.

Here, the focus is on what might best be referred to as the crisis process, though the term trajectories or, for that matter, stages would, in this regard, serve just as well as the process term.

In the current literary lore of organizations and agencies responsible for crisis management, or more specifically for emergency management, two critical periods between "normalcy" and the "calamitous event" itself tend to be differentiated.

One has been often termed the crisis expectant period, or crisis expectancy. The second, crisis surge. Such concepts are certainly not without an important degree of mushiness and their more precise delineation is not altogether easy.

Operationally, however, it would seem possible to clarify, and thus perhaps render more precise, these postulated different, if interdependent, crisis stages.

If the concepts of crisis expectancy and crisis surge are to remain in organizational usage and if they are to be associated with different clusters of emergency actions precipitated by the very crisis itself, in whatever stage, then it is worthwhile to seek their clarification, if only definitionally, without necessarily being committed to the inherent ambiguities related to continued use.

Given the onset of a crisis, itself as defined previously, crisis expectancy then might best refer to system mobilization as the cluster of appropriate emergency actions. Here, the term 'system' has to do with the emergency management system--that is, all organizations and agencies with identified responsibilities for coping with this or that crisis.

This means, as it were, that the emergency management system in all

its organizational forms and all its organizational levels (from Federal to local) "jumps into action" so as to configure itself to "jump into action" for, and on behalf of, the larger body politic if the expectant period does not lead to crisis abatement or dissipation but rather if the threat keeps increasing and the calamity thus acquires over higher likelihood over time.

Thus in this crisis expectancy the management system sharply enhances its readiness by shifting all more routinized activities, or most of them, toward being oriented to maximum capabilities for dealing with the actualized hazard, with the calamity--should it, in fact, be realized.

The crisis surge period, in turn, is defineable in terms of the onset of emergency management activities for, and on behalf, of the community (body politic or its relevant segments) at large. The "marker" of this surge period, and thus the conceptual boundary between expectancy and surge, has to do with an official action to involve the relevant public in emergency actions. In effect, this amounts to the period which follows the issuance of official warning of a highly probable, if not impending, calamity.

Thus what constitutes surge for the organizations with emergency management responsibilities amounts to emergency mobilization stage for the potentially victimized, or otherwise affected, body politic.

Yet in other terms: in the crisis expectant period, the emergency management system mobilizes itself in order to take appropriate readiness actions and, above all, to be capable of helping to officially mobilize the relevant public in the course of the crisis surge stage, should it ever come about.

Self-selected, informal and unofficial mobilization on the part of some segments of the public, and some organizations (not otherwise responsible for emergency management), may well occur in the crisis expectancy. But this is different from the public mobilization that is expected, or hoped for, upon issuance of an official warning which, in this conceptualization, characterizes the onset of crisis surge.

To be sure, the public does not think about crisis stages in terms of expectancy and surge. These are essentially management concepts and if they are to continue to be used, as has been said before, this is the domain to which they need to be restricted.

Rather, insofar as there are perceived crisis stages on the part of the public (which includes everyone as well as all organizations NOT charged with emergency management responsibilities under normalcy conditions), they involve to the difference between being alerted and being warned.

Thus mapping onto the management-pertinent crisis expectancy is

crisis alert on the part of the public; and crisis surge as a management-relevant response period is one of crisis warning as it has to do with the public. Two major classes of crisis trajectories can be stipulated: three main types of trajectories are salient for each such class. The two categories and the relevant types are shown in Figures 1 and 2. In the first class, a calamity is the outcome of the process. In the second class (Figure 2), the crisis subsides.

In TYPE I (Figure 1), there is realization of the existence of a crisis: the probability of hazard actualization has sharply increased to increase the magnitude of peril so as to call for emergency actions at least on the part of the appropriate emergency management system. The crisis then moves through the expectancy period and further escalation of the peril induces an actual warning of an impending calamity. The crisis surge stage which follows results in the actualization of the hazard, in the calamity itself. Actualized hurricanes or floods are good examples of this graduated unfolding of events.

TYPE IV (Figure 2) situation is like that of TYPE I except that, following the surge activities, the calamity does not occur--the crisis subsides and normalcy is (rather rapidly) restored.

TYPE II, with its calamitous outcome, and TYPE VI, ending in crisis subsidence, are processes which move, as it were, directly from "normalcy" to acute crisis recognition characterized by warning; thus crisis surge phase is reached directly and the expectancy period is by-passed.

The pattern is illustrated by such events as tornadoes (at least most of them), skyjackings and other terrorist threats, "out of the blue" concept of a possible outbreak of (nuclear) war, toxic spillages and the like.

TYPE III trajectory moves from "normalcy" to "calamity" without any prior warning or alerting and thus without any crisis-related emergency actions or tooling up for crisis coping in the above sense. Explosions, accidents, most earthquakes provide good examples of this pattern.

Finally, TYPE V (Figure 2) represents a situation in which the surge period does not occur and the crisis subsides following an antecedent crisis expectancy.

Typical examples might be such things as severe storm or tornado alerts hurricane alerts and the like when such situations do not lead to a shift toward a warning stage, but, rather, the peril diminishes and the calamity does not materialize.

This schematization of major crisis trajectories is less useful as a device in terms of which hazards and calamities can be categorized than it

Figure 1

PROCESSES OF CRISIS ACTUALIZATION

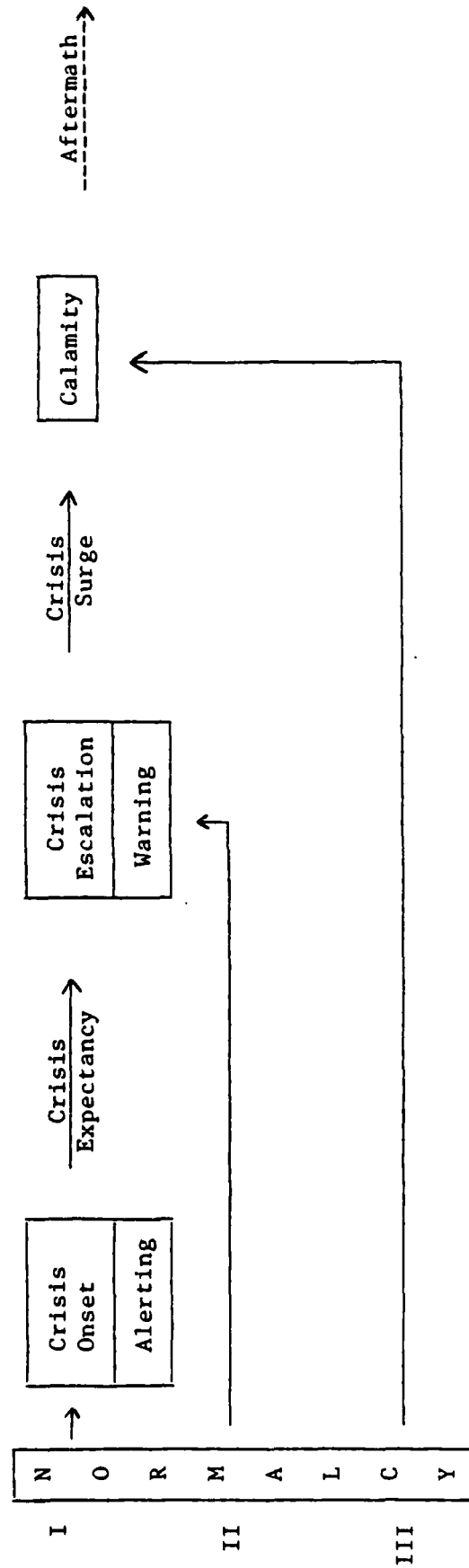
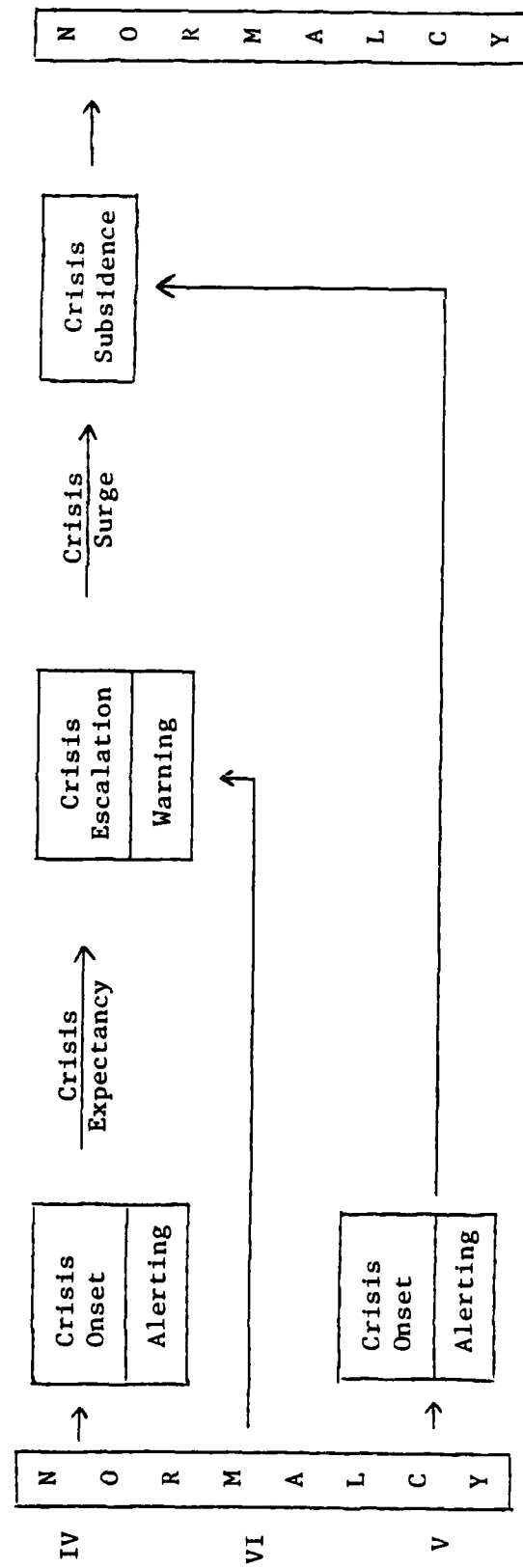


Figure 2

PROCESSES OF CRISIS SUBSIDENCE



is for contingency analysis on the one hand, and for post hoc evaluations of "what took place" in the various stages of an unfolding crisis.

The former conclusion is supported by the observation that most hazards which induce a crisis, whether they end up in a calamity or crisis dissipation, may display several of the trajectories and cannot be readily associated with only one of them.

In turn, however, contingency type of analysis permits the assessment of (a) likely and (b) variably effective emergency actions, by organizations and the public alike, if a crisis displays one trajectory rather than another one.

Furthermore, a post hoc evaluation makes it possible to note the effectiveness of actual emergency actions given that the crisis trajectory was what it was.

Now, importantly enough, the trajectories are also time-lines. Though it may be impossible to ascertain that the conclusion holds invariably across all types of crisis, it is nonetheless possible to say with a robust degree of confidence: the longer the period over which emergency actions can be taken, greater the opportunities for effectively dealing with the emergency--either in calamity prevention, if that is possible at all, or in harm minimization or, at least, abatement.

The emergency management systems can be mobilized more extensively and effectively, if the expectancy period is of longer than of shorter duration; both system and societal mobilization of the surge phase are facilitated if the period is a longer rather than a shorter one, whether or not the calamity actualizes or dissipates.

In this regard then, trajectories of TYPE I are by far most problematic because normalcy is immediately transformed by the calamity itself and no pre-calamity emergency actions are possible and only trans-calamity and post-calamity (aftermath) activities become relevant.

Trajectories of TYPES II and VI, which by-pass the expectancy-alerting phase are, of course, next to TYPE I in being problematic. In TYPE II, the shorter the surge period which does, in this type, culminate in the calamity, the lesser the capabilities that can be marshalled for coping.

Yet, even the basic conclusion relating time availability in a crisis environment to enhancement of possible effectiveness of emergency actions must be modified lest it be, in its most direct formulation, quite naive. In fact, it is reasonable to postulate that emergency management capabilities, once mobilized, degrade or begin degrading after some lapse of time. Thus there is some time duration for expectancy and then surge

mobilization which may well be optimal but beyond which the efforts and resource deployments which go into such mobilization cannot be sustained.

Note a prior guess would prove a very good one, though it might be worthwhile to suggest that perhaps something of the order of a two week period of such mobilization might prove to be the most that can be expected. This says, in effect, that a crisis which continues without the occurrence of the calamity embedded in the crisis begins "to look like" a crisis that is about to subside or which is subsiding so that activities tend to begin returning to their normalcy pattern even while the crisis may still go on in some more objective terms.

Even though the question cannot be adequately answered here, it is worth discovering the maximum duration over which relevant emergency mobilization could be sustained, in whatever form such mobilization may take. This is particularly so since one of the longest possible crisis durations is likely to be associated with a deteriorating international crisis in which (nuclear) war represents the actualized hazard.

And this, in turn, raises a parallel question--also merely stated but not answered here--as to the minimum pre-calamity time duration required to permit a tolerable enhancement in capabilities to cope with the calamity.

In any event, more analytic work needs to be done, both at conceptual and empirical levels, to provide more definitive answers to the many issues which the discussion opens

5. PSYCHOLOGICAL AND SOCIAL PERSPECTIVES ON CRISES

5.1 Introduction

Man's history is an abundant chronicle of attempts to avert, control, and cope with disruptive events that challenge established beliefs, lifestyles, and physical integrity. These events produce stress at the individual, group, and community level, though their ubiquity and diversity inhibits a precise definition of the phenomenon. However, the voluminous extant research findings and ongoing research efforts indicate that stress is invariably discomforting and often unavoidable. It frequently elicits changes in attitudes and behavior. Research suggests stress is often nonspecific in character because it is an inferred concept of varying magnitude. Consequently it is impossible to isolate and difficult to study. Its noxious and elusive character notwithstanding, stress encourages resistance to the perceived cause, adaptation to the changing environment, and reinstatement of a homeostatic state. Because a definition of stress is useful, within the context of this research stress shall be defined as a nonspecific result of any demand on the individual, group, or community which is objectively existant or subjectively perceived as a threat to accomplishment of goals, equilibrium, or survival. The scope of this report limits stress producing events to man-made and natural disasters (as discussed in Chapter 3) or the threat thereof, which are community-wide in impact and could induce the mobilization of emergency management organizations.

The stress concept spans a collective area of study that includes the social, psychological, physical, and biological sciences. Stress is a key factor in the analysis of many problems ranging from structural engineering to medicine. The contributions of psychology and sociology are paramount to our purposes, while those of biology, medicine, and physics provide useful insights and analogs.

In this report, psychological stress shall represent individual emotional states and cognitive processes whereby a present or future event is viewed as a threat which in turn creates a state of relative individual tension. Studies concerned with identifying prognostic events and/or conditions which lead to stress reactions are germane to our interests. These interests extend to discussions of cognitive and behavioral sequelae of threat perception. We will portray psychological stress as an intervening variable, a state of mind, whose presence activates a series of coping processes. The sociological contributions will concentrate on structural reactions to crisis events. The bulk of the study findings in this report are derived from disaster field studies, theoretical pieces, and public attitudinal studies of crisis-related attitudinal and behavioral probabilities. These analyses and the theoretical perspectives therein provide the boundaries within which this chapter on stress proceeds.

5.2 Psychological Stress

Psychology's understanding of stress arises from a variety of methodological approaches. These clinical, laboratory, and field observations of stress allow broad applications to human experience. A general discussion of these findings will lend an understanding of the individual's role in the broader scoped sociological studies to follow.

Many of the psychological studies of stress have focused on the identification of types of stress producing events, the outlining of processes whereby individuals react to stress, and the recognition of specific outcomes of stressful events.

An abundance of literature lies in the first of these categories. The search for specific life events which produce high levels of adaptive functioning begins at least as far back as Hinkle et al. in their study, "An Investigation of the Relation Between Life Experience, Personality Characteristics, and General Susceptibility to Illness". Since that time research has used surveys and observations in the natural settings of such events as widowhood (e.g., Clayton, Desmarais, and Winokur, 1968; Parkes, 1972; Clayton, 1975; Vinokur and Selzer, 1975), illness and trauma (Hamburg and Adams, 1967; Wyler, Masuda, and Holmes, 1968; Rahe, 1974), and the loss of employment (Cobb and Kasl, 1977; Kasl, Gore and Cobb, 1975; Buss and Redburn, 1983; Brenner, 1975). These findings and others are indicative of the wide ranging class of stress-producing events. Some events are inherent in the normal life cycle (e.g., widowhood) while others seemingly occur at random (e.g., unemployment). Regardless of the types of events, they all have the ability to disrupt lifestyles and produce emotional disturbances that could lead to significant health problems (Brown and Birley, 1968; Myers, Linderthal and Pepper, 1974; Antonovsky and Kats, 1967).

These strictly individual crises do not fall within the realm of emergency management contingencies. Nonetheless their value lies in the research questions which they raise--the role of the individual perception of threat, the cognitive processes leading to these decisions, and the coping behaviors which follow. The answers to these questions contribute to our ability to predict responses at the aggregate level to such events as natural and man-made disasters which involve emergency management agencies.

One of those concerns which has arisen from the life events literature is whether the event or the individual's perception of it produces stress. The argument presents a classic example of the idiographic versus nomothetic perspective (Dohrenwend and Dohrenwend 1980). Briefly the issue is whether or not the specific events are actually a threat to the individual or whether the threat lies in the meaning they are assigned. This debate can assume a search for first causes. It highlights however, the very important fact that some events are inherently biological in nature (e.g., disease) and therefore in cause. On the other hand, other events (e.g.,

widowhood) have a much greater element of pre-existing meaning and range of expectations for the individual involved. In the light of this distinction, studies of stress benefit by measuring (or at least recognizing) the individual's prior experience, knowledge or beliefs about this particular type of event. The debate also serves to illustrate the transactional nature of stress; that is, stress cannot solely be defined in terms of an objective event nor in terms of the individual's perception. Stress is best defined as the interaction "between individuals and situations rather than of either in isolation" (Lazarus, 1966; p. 5).

The second category of psychological stress research, the processes which produce reactions to stress, coexists with the first while independently verifying the transactional nature of stress. Out of this research arises a model of the processes by which stress produces coping behaviors as an adaptation.

A subtle variation of the concept stress occurs in this literature. It is transformed into the concept, "threat." Threat is a specification of stress. It too, is defined as an intervening variable; a state of mind. Threat is a research inference that theoretically drives other psychological processes according to its meaning and magnitude. Threat represents an empirical referent to the feeling of stress. It refers to something in the environment which has caused this feeling to arise. A threat represents antecedent conditions which the individual has defined as potentially harmful to his physical well-being or expectations for an orderly accomplishment of goals. Inherently anticipatory in character, it refers to the possibility of an occurrence rather than its actuality. To this extent, threat is oriented to the future and not the present.

The magnitude of the perceived threat has referents in the individual's experience, learning, and thought processes. Accordingly, it is not simply a yes/no proposition, but rather a continuum of harm probabilities. Objectively, a threat may have a far greater potential for harm than an individual accords it depending on the available cues, defense mechanisms, and cognitive processes (Lazarus, 1966; Withey, 1962).

Richard S. Lazarus provides a comprehensive model of the threat processing sequence. He integrated representative findings and approaches to the study of stress, creating a:

Theoretical frame of reference to identify the realm of discourse to provide a language of terms, concepts, and principles to suggest how these concepts are interrelated and to indicate as much as possible the operations which define the concepts (1966, viii).

Lazarus created an explanatory model which encompasses the entire

process of threat perception, the creation of a stressful state of mind, and the selection of individual coping behaviors.

Elaborating the distinction between the expectation and the actuality of harm, Birnbaum (1964) suggests thinking of threat in terms of "confrontation" with vicarious events of undetermined harmful potential. On the other hand, "impact" can be used to represent the occurrence and actual experience of the event.

This selection of terms should not suggest dissimilar cognitive processes. Either threat situation uses similar evaluative modes. Alfert (1964) entitles threat evaluation as "appraisal". Appraisal is a judgement which is made on the basis of individual beliefs, experiences with other similar threats, motives for future action, and knowledge. Appraisal then, represents a process, however fleeting, and not simply a sensation. It determines the significance of the future event and leads to the choice of actions to mitigate damage from the event. Thus appraisal takes into account certain characteristics of the event as well. Withey (1962) identifies these characteristics.

To elaborate, it would seem that threat has at least five primitive characteristics. Other characteristics that come to mind, such as source of threat, individual versus group threat, the quantity of information about the threat, ability to handle or tolerate a certain level of tension, etc., can sometimes be subcategorized under the following primitive characteristics or at other times, considered as determinants of various aspects of one or more of them.

1. Probability of occurrence of the threatened event.
2. Qualitative nature of the threat - physical pain, loss of loved ones, etc.
3. Estimated magnitude of deprivation in the mode(s) of threat.
4. Timing - imminence and duration.
5. Possibility of escape or adaptation (p. 95)

Rabkin and Struening (1976) discuss those personality factors which in interaction with environmental cues lead to a decision concerning the saliency of the threat. In their own words,

A critical factor in evaluating the impact of stressful events is the individual's perception of them. Such perception depends on personal characteristics determining the appraisal of the

significance of potentially harmful, challenging, or threatening events. It is this cognitive process which differentiates a stressor from a stimulus and which determines the nature of the stress reaction and subsequent activities (Groen, 1969). The perception of stressful events is mediated by two broad categories of variables, one consisting of personal or "internal" factors and the other of interpersonal or external ones, following the Dohrenwends' (Dohrenwend and Dohrenwend, 1969) conceptualization. Personal factors include, for example, biological and physiological threshold sensitivities, intelligence, verbal skills, morale, personality type, psychological defenses, past experience and a sense of mastery over one's fate (Rahe, 1974; Dohrenwend and Dohrenwend, 1969; Wolf and Goodell, 1968). Demographic characteristics such as age, education, income, and occupation may also contribute to the individual's evaluation of stressful conditions and his response to them (Uhlenhuth, Lipman, Batter, and Stern, 1974). The effects of most personal variables in mediating stressful conditions are fairly obvious: persons with more skills, assets, and resources and with more versatile defenses and broader experience tend to fare better. In general, the more competence individuals have demonstrated in the past, the more likely it is that they will cope adaptively with a current stressor. The more experience they have had previously with a particular stressor, the more probable that their present responses will be effective (Miller, 1977) (p. 1018).

The coping processes which emerge are both motor and psychological activities. Their intent is to eliminate the discomfort associated with the threat. The variety of these reactions is as complex as human personality and behavior. Nonetheless, coping behaviors usually involve attempts to avoid the event, to overcome it by attack, or to redefine it in defiance of objective reality. Based on those factors in the environment which have presented themselves to the individual, and those factors comprising his personality, any threat may be evaluated as inconsequential, resolvable, or highly dangerous. Because this process evolves over time, additional appraisal may occur. The success of initial responses and the presentation of new or changing cues stimulates reappraisal.

Janis and Mann (1977) describe five 'patterns of coping behaviors' for objective threats: vigilance, unconflicted inertia, unconflicted change to a new course of action, defensive avoidance, and hypervigilance. Of these reaction patterns vigilance is the more effective as a result of thorough information seeking, "unbiased information processing, and effective planning" (p. 36). The remaining four patterns result in defective decision making in objective threat situations. These five patterns are sequential steps. Each step becomes an end according to the individual response to the concomitant question posed at that step. Janis and Mann begin this

decision making process with an "authentic warning of impending danger" and follow with four questions the receiver asks himself.

1. Are the risks serious if I don't take the protective action?
2. Are the risks serious if I do take the most available protective action?
3. Is it realistic to find a better means of escape?
4. Is there sufficient time to search and deliberate? (p.37).

A negative response at any point stops the sequence and leads to a specific coping behavior. A positive response or a "maybe" leads to the next question in the sequence and so on. For Janis and Mann any termination at a step prior to the last (vigilance) is a defective reaction in the face of authentic threat. (Actual behavioral outcomes are discussed in subsequent chapters.) Janis, Mann and Withey provide a useful tool to understand the individual-environmental interaction which lead to decision making in an emergency. To their contributions can be added Glass' (1970) insights. While recognizing the indisputable role of threat specific characteristics, Glass suggests that the "presence of others (such as family members), and whether the individuals involved constitute a heterogeneous or homogeneous group" (p. 62). Glass highlighted the social aspects of the environment. Interpersonal relationships, norms of behavior within the family, friendship networks, and the work arena also influence the decision outcomes in a situation of impending threat.

Rabkin and Struening (1976) refine Glass' point when they state,

Another broad set of contingencies, or mediating variables, in the stress equation which may be considered social or transactional in nature consists of the buffers and supports accessible to the individual in his social environment. The social positions individuals or groups occupy in a community can materially influence their experience of stress and presumably, therefore, their vulnerability to a broad range of chronic diseases. While the effects of exposure to stressful events may be reduced for those who are effectively embedded in social networks or support systems (Caplan, 1974; Cassel, 1973), they are commonly exacerbated by deficiencies or impairments of such systems. Three such categories--social isolation, social marginality (minority membership) and status inconsistency--may be considered in this context (p. 1018)

5.3 Summary of Psychological Themes

A short summary of these psychological studies of stress will help to identify some implicit themes. These themes suggest many factors to be considered in the formation of agency policies regarding interventions in collective crisis situations.

1. Stress is a concept used by many disciplines to signify either a demand on present equilibrium or anticipated equilibrium. Any severe disruption in the normal or expected course of life events is a prime candidate for producing high levels of stress.
2. Psychologists have studied the multiform nature of stress in such categories as: (1) Objective events such as disease of known endemic harm potentials. (2) Events such as widowhood which occur during the normal life cycle and whose impact vary according to the meanings attributed to them by individuals and groups. (3) Events such as natural disasters whose scope is community-wide yet whose impact may be mitigated by individual perceptions and coping patterns. (4) Events in any of the above categories whose impact may vary according to available social resources, social structural location, and the quality of the social support networks in an individual life.
3. Psychological studies of stress find that its magnitude and sequelae are determined by a complex interaction of environmental factors (threat specific), individual cognitive processes, personality factors, and social situational factors. Stress therefore is a transactional product of these various factors and exists as a continuum of threat probabilities. Furthermore, these factors interact to produce varying experience of and response to crisis events.

5.4 Collective Stress

Collective stress is a predominant study of sociologists. These studies focus on threatening events such as natural and man-made disasters. The earlier ones were largely descriptive and exploratory accounts of community wide reactions to natural disasters. Later studies began to differentiate between reactions to actual disaster events and adaptations to environments that are disaster prone. The term "hazardous" describes these later environments.

The early disaster studies, as mentioned, accounted for community effects of natural disasters. They include documentation of organizational responses as well as interviews with victims detailing their emotions and recovery plans. Beginning at least as early as 1920, Samuel Price analyzed the social and economic consequences of a massive explosion in Halifax,

Nova Scotia. Since that time notable centers of disaster research have arisen. For nearly three decades the Disaster Research Center at Ohio State University, the Natural Hazards Research Center at the University of Colorado, and at the federal level the Committee on Disaster Studies of the National Academy of Sciences/National Research Council among others have accumulated volumes of field notes and observations of individual behaviors, collective preparedness measures and organizational roles in disasters.

Disaster studies of this genre are predominantly post-impact and either observational or survey in design. Their concerns have been the consequences of natural disasters and the nature of recovery efforts (especially those of formal organizations). Sociologists have since stepped beyond these separate study findings in an effort to identify generic behavioral processes in all disasters. Accordingly they have created numerous empirical constructs which await verification. Allen Barton (1969) reviewed many of these precursor studies. He formulated a full scale sociological treatise of collective stress behavior. In his own words:

There have been several attempts to summarize what is known about individual behavior in disaster (Wolfenstein, 1957; Fritz, 1961; Marks and Fritz, 1954). This review is concerned with putting some of these findings together, in order to analyze the operation of social systems under stress. We shall be more concerned with social consequences of behavior than with the inner processes that cause it; the emphasis is sociological rather than psychological. (p. 53).

Barton's contributions include a definition and classification of disasters in terms of event characteristics and phases. Barton outlines individual behaviors according to their respective roles in private and work-related spheres. He thereby provides insightful elaborations of potential behaviors and mutually exclusive roles. Barton's analysis of roles is a sociological one because behavior, as the unit of analysis, is guided by social structural expectations embodied in roles. Roles are the behavioral realizations of the values coinciding with social structural position because roles reflect the distinct values of religious groups, ethnic groups, and economic classes to name a few. Roles are conglomerations of learned behavioral expectations and reciprocal obligations. They span public and private life. Their influence in situations of collective stress is paramount. If one considers the powerful pressures to fulfill such duties as spouses to each other; parents to children, co-workers to co-workers in periods of normalcy, then imagine the additional pressures to perform reciprocal obligations during periods of threat to goals or survival. Barton correctly states that a community's response to a disaster is shaped by the role distribution of the community (as one of many community characteristics) in interaction with disaster type and disaster characteristics. This sociological perspective increases the predictive power and therefore the

probability of appropriate intervention from emergency management organizations. Barton encapsulates these insights in the concept of "altruistic community." His analysis of seemingly disparate behaviors at many levels brought him to an awareness that communities create a consensus about their recovery at the same time as do their subdivisions. He writes:

The result of these psychological and social processes is a therapeutic social system that helps to compensate for the sorrow and stress under which many members are living with an unexpected abundance of personal warmth and direct help.... These behavior patterns persist until the more urgent needs are met; then the perceived reduction of the urgency of needs of others, and the growing concern with neglected private interest; swing the system back toward normal self-directed behavior (p. 207).

Barton explains collective altruism as the interaction of the variables which comprise the community. These variables include: the nature of interpersonal relations at the individual level (e.g., vested interests, family structure), contextual relationships (e.g., suddenness and intensity of the event impact) and the properties of the community (density of social ties, nature of media system). A lengthy quote from Barton summarizes precisely this complex model:

To produce a model for analyzing the behavior of communities by means of a system of collective propositions, we have to aggregate not only the individual level relationships but also the contextual relationships, combining these with the relationships among global properties of communities. Such a collective level model would then show the various positive and negative feedback mechanisms that have been discussed.

The whole set of relationships can best be understood as a system with certain inputs and outputs, linked by intervening variables, which can be organized into several main mechanisms. The output of the system is the reduction of objective and subjective deprivation of the victims of collective stress. This is achieved by activating a series of processes. The stress agent by its "impact" activates the formal and informal communications systems of the social system including the victims' own willingness to communicate about their deprivation, and thereby spread knowledge of the victims' situation. This sets off the relative deprivation mechanism, by which those who have not suffered the most severe deprivation come to feel relatively non-deprived. The sense of being relatively advantaged strongly motivates helping among large numbers of both victims and non-victims. At the same time the communications and contacts

arouse sympathetic identification with the victims, which also strongly motivates helping. To support these motivational factors, the normative mechanism amplifies the sense of moral obligation to help and puts pressure on those who may not themselves feel such a moral obligation through perceived community norms.

Certain features of the stress input are important in determining whether or not these intervening processes will operate. A sudden, socially random impact makes for greater informal communication and awareness. It is also less likely to have become involved with vested interests in the causes of the deprivation, which can lead to suppression or distortion of news media content, and encourage explanations that blame the victims for their own deprivation. An extremely severe and widespread impact may overload the system and create fear and rejection of the victims by potential helpers. The "best" disaster is one of moderate size and sudden, random impact in a locality. A community with strong informal integration is more likely to have good informal communications, which are important to the process. And the prevalent ideologies and values have a very powerful effect on the aggregate response.

When conditions are favorable, the therapeutic community response sets in motion enough helping behavior to reduce rapidly the deprivation of the victims of collective stress, thereby restoring the situation to its prior equilibrium. It is possible that the effect will even go beyond that to produce a net improvement, an "amplified rebound" from disaster. The notion of the positive effects of stress underlies Toynbee's "challenge and response" theory of the growth of great civilizations, and a number of other evolutionary models of social progress. As society comes to have better control of its physical environment, this source of challenge becomes much less important. On the other hand the existence of threats from other societies or from groups within a society has not declined. World history since 1914 does not suggest that society is likely to stagnate from a shortage of socially induced disasters. The socially induced disasters, however, tend to not have the best features for bringing out the therapeutic community response: indeed they may produce a downward spiral of degeneration. (p.278-9).

Barton presents an overview of the collective response to a stress event. This analysis is more than a simple summation of individual activities; it seeks to integrate another level of analysis which is distinctly social. His analysis identifies general characteristics of the system response and their interaction with characteristics of the disaster event. As such, Barton's work represents the finest effort in the 1960's to review and elaborate the disaster literature.

In the early 1970's Mileti, Drabek and Haas (1975) carried Barton's work to a more comprehensive and detailed state. Whereas Barton's primary concern was to present a case for the use of sociological theoretical models for the systematic study of collective stress, Mileti, Drabek and Haas seek to "provide at least a moderately detailed answer to the question, 'What is now known about human adaptation and response to natural hazards and disasters?'" (p.1). Mileti, Drabek and Haas however, reject the use of stress as an integrative perspective to the sociological study of disasters. Their criticism lies in the belief that stress has not been adequately defined and measured. In their own words, "System stress can remain so ill-defined that almost any condition qualifies." (p.6). Furthermore, the level of stress can vary among different disaster types. In a similar fashion the impact of disasters varies at different levels of a community:

If we ever hope to understand system response to such events, we must differentiate varied stress levels and recognize within a single event, different systems may be experiencing very divergent levels of stress." (p.7).

The differential impact of an event reaches within the social system to individuals and groups. Events defined as disasters by emergency management officials may not be defined as such by others. Accordingly very diverse responses may result. The answer to this disparity lies in the qualitative differences in the meaning of *specific events to the perceiver*. For Mileti, Drabek and Haas these limitations in the "disaster as stressor" perspectives preclude it from a productive analytic role at this time. "While the stress orientation appears to offer an integrative mechanism, a wide variety of conceptual and operational problems remain unresolved and only vaguely explicated." (p.8). Having stated these qualifiers, Mileti, Drabek and Haas proceed to abstract the research findings on perceptions of hazards, concomitant adaptations to those environments, and actual disaster behaviors. (Topics discussed in greater detail in subsequent chapters.)

5.5 Summary of Sociological Themes

We stated specific themes which arose from the psychological study of stress. The sociological study of stress produced significant themes also. Among these are the behaviors of formal organizations in disasters-- a topic not germane to this report. Sociologists have also investigated the collective reaction to stress, producing the following general themes:

1. The cognitive processes which produce responses to threat are overlaid with a variety of individual roles. Roles reflect socio-cultural values, beliefs, and behavioral expectations. While the majority of role behaviors pertain to everyday affairs; under crisis situations, obligations to family security and survival become paramount. Exceptions to this rule

include a crisis whose onset was too swift to allow protective response or an instance of absolute ignorance of a crisis event. Individuals will consider their obligations to others as they decide what course of action to pursue in a disaster. Their assessment of the risk includes therefore, the estimates of the threat to important others in their life. Emergency management officials should therefore anticipate behaviors whose intent is to ascertain or provide safety to family, friends, or neighbors.

2. Before, during and after a crisis event, communities temporarily suspend normal pursuit of private interests in an effort to heal its many injuries. This unusual level of altruism survives the period of perceived urgency. Throughout its duration, however, greater levels of contributions, material and otherwise, can be maintained as a result of moral pressure from all levels of the community.

3. Stress responses were conceived in the psychological literature as originating in the conglomeration of individual and event characteristics. The sociological literature extends this perspective to include a third set of interacting variables--the community characteristics.

4. The perception of threat (or the presentation of stress) arises from an interaction of individual, community, and event specific characteristics. Likewise, the perceived magnitude or the actual experience of the crisis varies according to those variables. Intervention before and after crisis events should operate with the understanding of the sociocultural factors which at the community level contribute to the meanings of the crisis event.

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6. THE RELATIONSHIP BETWEEN ATTITUDES AND BEHAVIORS

6.1 Introduction

Sociology is a discipline in which understanding human behavior and predicting it are the two substantive concerns of utmost importance. The relationship between attitudes and behavior is one approach to these concerns and therefore must be critically scrutinized. The traditional social-psychological definition of attitudes as precursors or predispositions to behavior has been found faulty, and numerous efforts have been undertaken to explain the apparent inconsistencies between what people say and what people do. This review identifies some of the classical studies in this area, and present some of the theories that have been offered in explanation of observed consistencies and inconsistencies between attitudes and behavior.

¹ This preliminary statement of the theory stages a small section entitled "Attitudes and Behaviors Under Crisis," to demonstrate the relevance of these theoretical findings to disaster research.

6.2 Deutscher's "Classical" Studies

LaPiere's 1934 study is probably the earliest effort to purposely examine the relationship between attitudes and behaviors (and was also the impetus to Deutscher's concern with the problem). Although LaPiere's methods have been appropriately criticized in ways which will be discussed further, the results of his study demonstrated to many social scientists that expressed attitudes and overt behaviors are not, in fact, always consistent.

LaPiere's study, like many designed to test the consistency of sentiments and acts, involved attitudes and behaviors expressed toward a minority group. LaPiere toured the western section of the United States with a Chinese couple, frequenting motels, hotels, and restaurants--a total of 251 of them. Only at one of these were the Chinese couple refused service or accommodations. Six months later, LaPiere sent out a survey to the same 251 facilities (and also to a control group which had not been visited by LaPiere and his Chinese friends). Of the 128 replies from the experimental group, over 90% stated that they would not serve Chinese guests. (The results were comparable in the control group.) On the surface, it appeared that if attitudes and acts were related, in this case it was in fact an inverse relationship.

¹Irwin Deutscher's book WHAT WE SAY/WHAT WE DO: SENTIMENTS AND ACTS (1973), and Allan Wicker's 1969 article "Attitudes versus Actions," provided the bibliographic references and reviews that form the basis of this chapter.

In his report, LaPiere (1973:15-16) stated the following:

All measurement of attitudes by the questionnaire technique proceeds on the assumption that there is a mechanical relationship between symbolic and non-symbolic behavior. It is simple enough to prove that there is no necessary correlation between speech and action, between response to words and the realities they symbolize...

LaPiere concluded that qualitative studies, characterized by the study of behavior rather than the measurement of elicited attitudes are superior to quantitative studies since a person's verbal reaction to a symbolic situation may be quite different from his behavioral reaction to the situation in reality.

Deutscher, who himself is a confessed advocate of qualitative methodology, picks up on LaPiere's distinction between symbolic and non-symbolic situations. He notes that even when they both are supposedly tapping the same "object," (in LaPiere's case, Chinese people) the meanings conveyed to an individual by each may be quite disparate. Deutscher (1973:43) says that "overt action can be understood and interpreted only within the context of its meaning to the actors, just as verbal reports can be understood and interpreted only within the context of their meaning to the respondents." This perspective downplays the value of sociological methods which elicit attitudes since "attitudes and behavior are discrete phenomena that are theoretically independent of each other...[and therefore] it is unreasonable to posit a prediction of behavior on the basis of attitudes" (1973:100).

The second of three classical studies reprinted and discussed by Deutscher in this area was undertaken in 1958 by Melvin L. DeFleur and Frank R. Westie, entitled "Verbal Attitudes and Overt Acts: An Experiment on the Salience of Attitudes." It too involved a minority group as the object of study, though blacks were chosen instead of Chinese.

DeFleur and Westie were much more systematic in their procedure than was LaPiere. Having administered a Summated Difference Scale (Westie, 1953) to a sample of 250 students, they were able to select 23 of the most prejudiced and 23 of the least prejudiced persons from the sample. The 23 pairs were matched on eight social background variables. Each of the 46 subjects viewed slides picturing a well-dressed black and a well-dressed white of the opposite sex, informally, though not intimately sitting with one another. The subjects were then asked if he she would pose for such photos. Each subject was given a photo-release statement containing a graded series of seven uses to which the photograph might be put: (1) laboratory use to be seen only by professional sociologists, (2) publication in a technical journal read only by professional sociologists, (3)

laboratory use to be seen by a few dozen students, (4) as a teaching aid to be seen by hundreds of sociology students, (5) publication in the student newspaper in a story on the research, (6) publication in the student's hometown newspaper, (7) use in a nation-wide publicity campaign advocating racial integration" (Wicker, 1969:53). The subjects were to indicate for which of the seven uses (from none to all) that he would be willing to pose. Scores were dichotomized above and below the mean, and compared to the attitude measure for each subject. The Chi-square obtained was significant at the .01 level, but "the proportion of inconsistent subjects (14 out of 46) seems large considering that the sample was selected to represent the extremes of the verbal scale" (1969:53-54).

DeFleur and Westie say of the results that

The lack of straight-line relationship between verbal attitudes and overt action behavior more likely may be explained in terms of some sort of social involvement of the subject in a system of social constraints, preventing him from acting (overtly) in the direction of his convictions, or otherwise "legitimizing" certain behavioral patterns. These channelizing influences on behavior have received theoretical attention in terms of such concepts as "reference groups," "other directedness," and "significant others." (DeFleur and Westie, reprinted in Deutscher, 1973:74)

Thus, DeFleur and Westie conclude that a verbal assessment of a subject's attitudes is not enough: Rather, "analysis of the beliefs of an individual about the attitudes, norms, and values held by his reference groups, significant others, voluntary organizations, peer groups, and the like may be essential for better prediction of individual lines of action with the use of verbal scales" (DeFleur and Westie, reprinted in Deutscher, 1973:75).

The third of the three "classical" studies which Deutscher presents is the 1965 work of Lawrence S. Linn, "Verbal Actions and Overt Behavior: A Study of Racial Discrimination." Again, the object of study is blacks, but unlike in the DeFleur and Westie and LaPiere studies, Linn is careful to use the same attitude object for comparison with overt behavior. This is one of the major faults, Linn notes, that characterized the earlier studies; LaPiere compares attitudes toward the Chinese race in general with overt behavior expressed toward a specific Chinese couple, and DeFleur and Westie compare attitudes towards blacks in various occupations (through the Summated Differences Scale) with behavior involving posing with blacks in a photograph.

The attitude questionnaire used by Linn was comparable to DeFleur and Westie's photographic release statement, except that the selections made by the subject did not obligate him in any way to actually pose for a photo. The questionnaire items were completely hypothetical. Four weeks after the administration of the questionnaire, 34 of the female subjects were

asked to volunteer for an interview. At the interview, each subject was asked to sign a genuine photographic release statement comparable to the attitude questionnaire previously administered. Of the 34, two subjects were not willing to pose with a black on the attitude questionnaire: In the behavioral situation, the number increased to twelve. "Also, the mean number of release levels signed on the questionnaire was 4.9 compared to 2.8 in the behavior situation" (Wicker, 1969:54).

As do DeFleur and Westie, Linn looks to the effects of reference groups to explain the inconsistency between attitudes and behaviors. He says that he "recognizes the importance of reference groups in the decision-making process, but believes that they are more inclusive than peers alone and furthermore should be seen as antecedent rather than intervening variables. In other words, reference groups influence the individual by being part of his normative system which reflects the attitudes and norms of society in which he lives, as well as his community, family, friends, and school" (Linn, reprinted in Deutscher, 1973:88). He also suggests that discrepant behavior in either direction (positive being expressed prejudicial attitudes combined with non-discriminatory behavior and negative being expressed non-prejudicial attitudes combined with discriminatory behavior) can be caused by "a breakdown of unstable attitudes which are part of a social role that has never been behaviorally put to test" (Linn, reprinted in Deutscher, 1973:85).

Thus in these three studies we see at least three possible causes of inconsistency between sentiments and acts. Methodologically speaking, discrepancies may arise if the attitude object and the overt behavior measured are not validly comparable. Secondly, it appears that a person may not act in accordance with his attitudes if he believes that his "significant others" would disapprove and he is motivated to comply with his normative beliefs. Thirdly, attitudes which come as part of the package of a social role may not be stable, and therefore easily subjected to breakdown when an actual overt behavioral situation first appears and tests them.

6.3 Wicker's Reviews

In his article entitled "Attitudes versus Actions: The Relationship of Verbal and Overt Behavioral Responses to Attitude Objects" Allan W. Wicker lists and discusses numerous other studies dealing with the attitude-behavior relationship. All of the studies he cites had to meet the following four criteria: (a) the unit of observation must be the individual rather than a group, (b) at least one attitudinal measure and one overt behavioral measure toward the same object must be obtained for each subject, (c) the attitude and the behavior must be measured on separate occasions, and (d) the overt behavioral response must not be merely the subject's retrospective verbal report of his own behavior" (Wicker, 1969:41).

One of the categories of studies on which Wicker reports is the attitude object of jobs. Some of the material that he uses is taken from V. H. Vroom's 1964 work entitled *WORK AND MOTIVATION*. In his review, Vroom analyzes 15 studies concerning work performance in which employee attitudes toward their jobs were compared with their performances on the job. According to Vroom, the results were discouragingly low with "the median product-moment correlation between job performance and attitudes [being] .14." (Wicker, 1969:52). Wicker also cites studies concerning work absences and work resignation summarized by Vroom, and concludes that "the evidence from Vroom's (1964) review suggests that job attitudes have only a slight and often insignificant relationship with job performance and absences from work. The few available studies relating job attitudes with resignations [Weitz and Nuckols (1953), Webb and Hollander (1956), Sagi, Olmstead and Atelsek (1955)] tentatively suggest that these two variables may be more closely related" (Wicker, 1969:52).

A second category of studies examined by Wicker includes several of those in which the objects of study and minority group members. He reviews the LaPiere, DeFleur and Westie, and Linn studies, noting the inconsistencies which have been discussed previously. He also cites, among others, a study performed in 1952 by Kutner, Wilkins and Yarrow entitled "Verbal Attitudes and Overt Behavior Involving Racial Prejudice."

This study involved eleven restaurants and taverns in the suburbs of a northeastern city. Two white women acted as guests in each of the eleven facilities. After their arrival in each, they were shortly joined by a black woman. No problems arose, and the black woman received the same service as did the white women. An attempt was made shortly after these episodes to elicit (via mail) an attitudinal response from the managers of the various restaurants and taverns concerning their willingness to accept reservations for a party which would include Negro guests. No replies were received. Seventeen days later, the eleven facilities were contacted by telephone, resulting in five reluctant acceptances and six outright refusals. Control calls were made to these same places. When the race of the attendants was not mentioned, ten successful reservations resulted.

Wicker cites several other studies involving this same attitude object. Included are Berg's 1966 "Ethnic Attitudes and Agreement with a Negro Person," Malof and Lott's 1962 "Ethnocentrism and the Acceptance of Negro Support in a Group Pressure Situation," and Himmelstein and Moore's 1963 "Racial Attitudes and the Action of Negro- and White-Background Figures as Factors in Petition Signing." In each of these studies there was little or no correspondence between the attitude and behavioral variables. But in two other studies involving minority group members, the results obtained were significant. These were Fendrich's 1967 "A Study of the Association Among Verbal Attitudes, Commitment and Overt Behavior in Different Experimental Situations," and a study performed in 1956 by Kamenetsky et al. entitled "The Relative Effectiveness of Four Attitude Assessment Techniques in Predicting a Criterion." Of these results Wicker (1969:59) says:

The present review of attitudes and behaviors toward minority group members reveals little correspondence between the two types of variables, and in several cases there are reversals of expected relationships. The only striking exceptions to this overall conclusion are the studies by ...Kamenetsky et al. (1956) and Fendrich (1967). In each of these studies, the behavioral measure or a commitment to behavior was obtained prior to the verbal measure.

Wicker carefully adds, though, that there are other studies in which a behavioral measure is obtained prior to the attitudinal measure that show an inconsistency between the attitudes and the behavior expressed. He also notes (1969:65) that "if one's ultimate interest is overt behavior, prediction of attitudes from overt behavior is of less interest than prediction of overt behavior from attitudes, which requires that verbal responses be measured first."

Two other studies summarized by Wicker also resulted in an insignificant relationship between verbal attitudes and overt behavior, both of which dealt with cheating as the object. The two studies are Freeman and Aatov's "Invalidity of Indirect and Direct Measures of Attitudes Toward Cheating," and Corey's 1937 effort "Professed Attitudes and Actual Behavior." Of his results, Corey said that "whether or not a student cheated depended in much larger part upon how well he had prepared for the examination than upon any opinions he had stated about honesty in examinations." (Summarized in Wicker, 1969). Freeman and Aatov's summary was equally discouraging.

This study examined the relationship between overt behavior, a direct question, and three types of indirect attitude items on a sample of 38 Ss. Ss were ranked in terms of observed cheating, they were questioned both directly and indirectly about cheating, and the results were correlated. Since all correlations were insignificant, the results of the study cast some doubt upon the validity of either direct or indirect items for the assessment of certain types of overt behavior. (Freeman and Aatov, reprinted in Deutscher, 1973:207)

The evidence from this representative set of studies suggests that attitudinal measures are very poor indicators of behavior and, taken mechanically, provide weak evidence on which to support policy recommendations. Wicker notes that Insko and Schopler (1967) have suggested the possibility that much evidence showing a close relationship between verbal and overt behavioral responses has been obtained but never published because investigators and journal editors considered such findings 'unexciting' and 'not worthy of publication.' If such data exist, their publication is needed to correct the impression suggested by the present review that attitude-behavior inconsistency is the more common

phenomenon" (Wicker, 1969:65). Without denying the possibility of such an unfortunate circumstance, let us go on to identify other possible causes of inconsistency between measures of attitude and measures of behavior.

6.4 Why Inconsistencies?

One explanation of apparent inconsistencies is offered by Donald T. Campbell in "Social Attitudes and Other Acquired Dispositions." Campbell presents us with the concept of "situational thresholds" in this article. According to him, different situations have different thresholds: Situations in which verbal responses are being elicited about a particular attitude object may have a much lower (or higher) threshold than does an overt behavioral situation involving the same object. For example, in a study involving a minority group as the object, the threshold of the verbal response situation may be quite low, and quite high, on the other hand, for the overt behavioral situation. Thus, it might be rather easy to express an attitude of prejudice, but more difficult (because of factor like normative beliefs, or laws, for instance) to engage in discriminatory behavior which would actually be consistent with the attitude expressed. He says:

...that verbal report is in some circumstances a mode of diagnosing dispositions also manifest in overt behavior. This viewpoint contrasts strikingly with the prevailing tenor of the social attitude expression and overt action. By and large, this literature has confused correlational inconsistency with situational threshold differences, and has thus exaggerated the inconsistency present (Campbell, reprinted in Deutscher, 1973:207).

Deutscher makes several appealing responses to Campbell's assertion. In explanation of what Campbell is claiming, Deutscher (1973:214) says that "Campbell is explicitly concerned with the sorting out of the different types of 'inconsistency,' only one of which he would allow as 'real' inconsistency. If we knew the order of the hurdles as a result of our scale analysis then certainly we can no longer think of those who jump low hurdles and miss high ones as 'inconsistent.' We can, however, take note of the inconsistency of those who jump the high ones while missing the low ones..."

Deutscher (1973:212) notes, however, that "Campbell has not removed from the empirical realm the fact observed by his predecessors: people frequently do not act in accord with their sentiments! That empirical fact remains. What is different is that we are now beginning to understand it." And he adds that "if some apparent inconsistencies can be explained in this manner, we ought to be sensitive to the possibility that some apparent consistencies may obscure real, underlying inconsistencies." (1973:215).

In his 1969 article entitled "Attitudes, Behavior, and the Intervening

Variables," Howard J. Ehrlich attempts to specifically identify possible causes of the attitude-behavior inconsistencies which characterize the majority of studies undertaken to examine the relationship. He opens by saying that "it is the thesis of this paper that the evidence for inconsistency may be rejected on both methodological and conceptual grounds, and that there is no necessary incompatibility between a theory of attitudes and theories of interpersonal or intergroup behavior" (Ehrlich, reprinted in Deutscher, 1973:260).

Ehrlich briefly identifies three methodological problems which may be the causes of apparent inconsistencies in some empirical studies. First of all, he questions the reliability of attitude scales and other methods designed to measure attitudes, noting that the degree of consistency between attitudes and behaviors may vary according to the particular method employed. Likewise, Ehrlich notes that measurement error, in reference to the measurement of behavior, is equally frequent and problematic. He also identifies a methodological problem which has been mentioned previously: In many studies, the attitude measured and the behavior measured are not validly comparable with respect to the attitude object.

As stated in his thesis, Ehrlich has also developed conceptual arguments which refute the evidence of empirical inconsistencies between sentiments and acts. One line of thought is that there exist several different types of attitudes, and "...not all attitudes imply behavior" (Ehrlich, reprinted in Deutscher, 1973:262). He maintains that some attitudes are affective, some are cognitive, and others behavioral. Thus, instruments designed to elicit either of the first two types of attitudes would make poor predictors of behavior. He also asserts that "...reliable predictions of behavior can occur only from well-formed attitudes, or in the absence of a well-formed attitude, only when the predicted behavior is close in time to the attitude measurement. Even then, it may be the case that the measurement process per se can change the state of a poorly balanced attitude" (Ehrlich, reprinted in Deutscher, 1973:262).

Another argument presented by Ehrlich which refutes the predominance of attitude-behavior inconsistency in much of the literature is the claim that any particular behavior is the result of not one attitude, but the combination of several. Thus to be able to predict behavior it is necessary to have a measure of several of the attitudes involved. Wicker (1969:68) also makes note of this argument by stating that "a number of writers have argued that there are many attitudes or values relevant to any given behavior and thus the relationship between the behavior and a single attitude may appear to be inconsistent because other attitudes have not been considered." He adds that "it may be noted that the 'other attitudes' explanation has a behavioral parallel: There are many possible behaviors relevant to a given attitude, and if inconsistency is observed, it may be attributed to the failure to consider other behaviors" (1969:68).

One argument made by Ehrlich is reminiscent of Deutscher's concern with the meaning an actor associates with his behavior, or a respondent with his verbal answer. Ehrlich claims the following:

It may be that the reported inconsistency between attitude and behavior is a partial result of our naivete in phenomenological analysis, i.e., our inability to ascertain the intentional meaning of an actor's verbal acts...the fundamental problem may be that our presumed observation of inconsistencies derives from our failure to specify the criteria for judging a consistent or inconsistent response. (Ehrlich, reprinted in Deutscher, 1973:263)

This last comment is similar to Campbell's claim that not every case which has been identified as inconsistent is deserving of the label. This realization, and the development of appropriate scaling techniques, may allow social scientists to identify those instances where behavior and attitudes are truly inconsistent--in Campbell's language, high hurdles are successfully overtaken while low hurdles are not.

Ehrlich (reprinted in Deutscher, 1973:264) identifies several other "intervening variables" which may explain the noted discrepancies. Situational familiarity, indicating that through previous exposure, the actor has had the opportunity to crystallize stable attitudes, may be a pre-requisite to attitude-behavior consistency. Also, he notes, that "some attitudes may be clearly expressible only in verbal behavior," and thus, to attempt to express such attitudes behaviorally may result in contradiction of act and deed.

One intervening variable mentioned by Ehrlich and others is the claim that some people are simply more capable than others to competently express their attitudes in their action. Wicker says that "it has been suggested that attitude-behavior inconsistency may result from the inability of the behaving individual to make the appropriate verbal or overt behavioral response (Deutsch, 1949; Dollard, 1949). Persons having low intelligence, poor hearing or reading ability may not understand the investigator's questions or instructions. Also, an individual may lack the ability or knowledge appropriately to translate his attitude into effective acts" (Wicker, 1969:68). He adds that "Dollard (1949) had suggested that some instances of attitude-behavior inconsistency may be understood by considering the individual's overall activity level. Someone who is highly active may be more likely to act in ways consistent with his attitudes than the apathetic individual who is more or less indifferent to the environment and does not act strongly to gain his ends [p.630]" (1969:68-69). And the results of several studies suggest that "internals"--who attribute more reinforcing events to factors controllable or intrinsic to themselves--are more likely to take action with reference to their attitudes than externals (Seeman & Evans, 1962; Gore & Rotter, 1963)" (Rosen and Komorita, 1970:189)

Another factor to be considered, one which was noted by LaPiere before he undertook his 1934 study, is that "...there is a social situation intervening both when attitude is being expressed and when behavior is being observed, and...the discrepancy may be attributable to the two different situations." (Ehrlich, reprinted in Deutscher, 1973:272). Wicker says the following:

A general postulate regarding situational influences on attitude-behavior relationships is the following: The more similar the situations in which verbal and overt behavioral responses are obtained, the stronger will be the attitude-behavior relationship. The situational factors...include the actual or considered presence of certain people, normative prescriptions of behavior, alternative behaviors available, specificity of attitude objects responded to, extraneous unforeseen events and expected and/or actual consequences of various acts. Maximal similarity would exist when two situations were highly similar on all of the dimensions. (Wicker, 1969:69).

Along these same lines is Lewin's pessimism "about the predictability of overt behavior from knowledge of cognitive variables such as attitudes, because unforeseen events (e.g., chance meetings, accidents, illness) may intrude into the life space to disturb what might otherwise have been a predictable relationship" (Wicker, 1969:72). Wicker notes, though, that sometimes these unforeseen events can be anticipated and adequately measured with the instrument.

Deutscher also comments on the necessity of insuring comparable situations for the expression of attitudes and overt behavior. According to him, the sterility of interview situations makes them quite different from the situations in which overt behaviors and the "real expression of attitude[s]" (Deutscher, 1973:150) would take place. He adds,

Paradoxically, then, one of the few instances in which an attitude is unlikely to be translated into an opinion or an act in any social context is when it is elicited in a rigorously controlled interview situation by highly trained interviewers employing a technically high quality instrument. (Deutscher, 1973:149)

It is because of the lack of situational inconsistency Deutscher notes, that there is congruence between attitudes and behaviors in certain areas of study. Consumer behavior and voting behavior (Deutscher 1973) are often in accord with expressed attitudes and preferences because these opinions, which are expressed privately to pollsters, are also translated into overt acts in a private way. And this is exactly why, year after year, pollsters are able, often very accurately, to predict the outcomes of elections prior to election day. Thus, the discrepancies that typically arise when private attitudes are translated into publically-expressed opinions and behaviors are absent.

Later in his discourse, Deutsch (1973:230-31) adds that

...private opinion has nothing to do with overt behavior in a 'real' situation, i.e., one which involves other people and which has meaning to the subject. The evidence from the field studies, like the evidence from the laboratory, suggests that one's private opinion is not likely to be the same as his public opinion, that one can hold a number of public opinions simultaneously and, incidentally, that there is no necessary relationship between any kind of opinion about an object and subsequent behavior toward that object.

Thus Deutsch, and the others noted, maintains that in an overt behavioral situation, the particular activity in which one engages depends less upon his attitudes toward the object involved, and more upon his assessment of that particular situation. According to Deutsch (1973:240) "...a considerable proportion of the variance in human activity can be explained by efforts (conscious or unconscious) on the part of people to bring their sentiments and acts into line, not with each other, but with what they perceive to be the sentiments and acts of others in the immediate situation."

Accordingly, Vernon L. Allen, from "Situational Factors in Conformity," says that two people may possess similar public opinions, one because it agrees with his private opinion and the other because of "perceived social constraints" (Deutsch, 1973:280). But one could not expect their private behaviors to be the same based on these public attitudes. "The reverse is also possible: apparent differences may cloak basic similarities, just as apparent similarities can cloak basic differences" (1973:280).

- In summary, it appears as if there are numerous factors which affect and may disturb the relationship between attitudes and behaviors. Deutsch admits that "we are beginning to understand that the independent variable (sentiments) has very little if anything to do with the dependent variable (acts)." He adds, "it is to the complex interpretive process that these studies are turning (Deutsch, 1973:256-57). Ehrlich also maintains that "...the simple question of consistency of attitudes and behaviors is misleading. The correct representation of the problem should take the form: Under what conditions, and to what degree are attitudes of a given type related to behaviors of a given type?" (Ehrlich, reprinted in Deutsch, 1973:264).

6.5 When Consistencies?

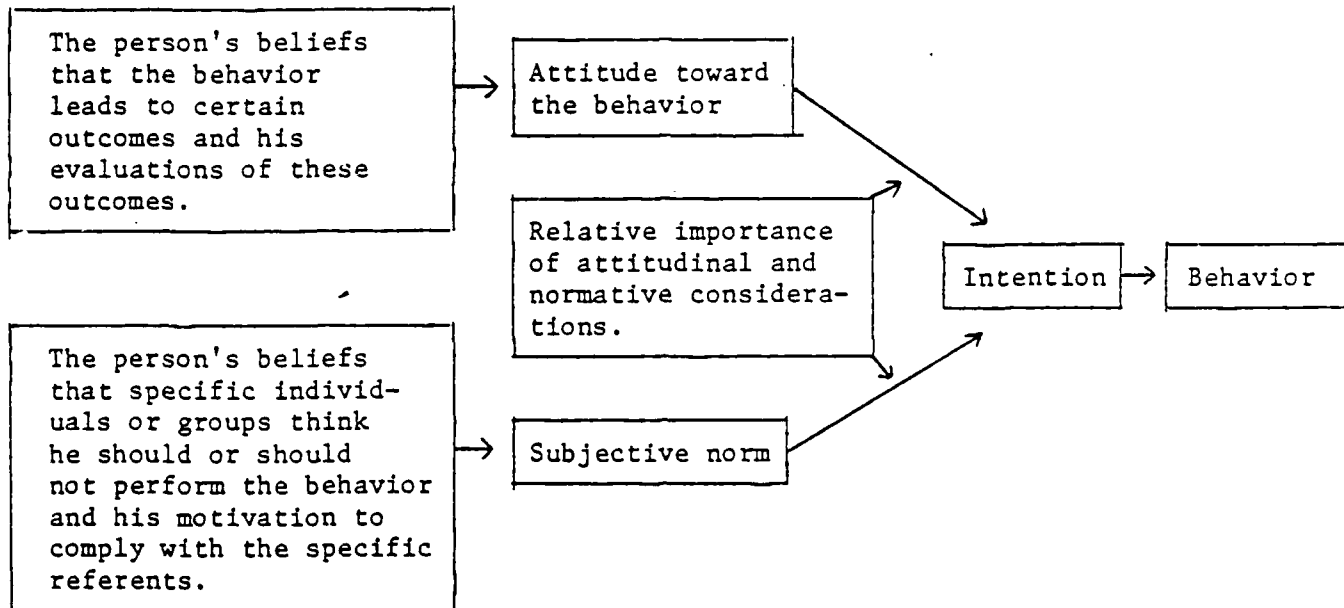
According to Regan and Fazio from "On the Consistency Between Attitudes and Behaviors: Look to the Method of Attitude Formation," "the question facing researchers is...no longer whether an individual's attitudes

can be used to predict his overt behavior, but when. The task is to specify those variables which determine whether an observed attitude-behavior relationship will be relatively strong or weak" (Regan and Fazio, 1977:30). They note that "as Kelman (1974) has recently pointed out, there is other empirical evidence largely deriving from survey studies, that does demonstrate a strong relationship between attitudes and behavior." (Regan and Fazio, 1977:29).

The hypothesis of Regan and Fazio (1977:30) is similar to an idea suggested by Wicker: Those "attitudes which have been formed and developed through direct personal interaction with the attitude object are maximally likely to influence, and therefore be good predictors of, subsequent behavior toward the attitude object. Attitudes formed on the basis of direct personal experience have a stronger dynamic relationship to subsequent behavior than those deriving from external resources." Regan and Fazio tested the hypothesis in two different experimental situations which involved quite different procedures, measuring instruments, and attitude objects. Both studies confirmed the hypothesis as "greater attitude-behavior consistency was demonstrated by the subjects who had direct prior experience with the attitude object" (Regan and Fazio, 1977:41). In their summary, they mention that a study undertaken in 1967 by Watts similarly indicated "a substantial difference between attitudes formed (or, as in his experiment, changed) on the basis of personal participation and those which have been altered by external means" (1977:42).

Perhaps the most reliable way to evoke attitude-behavior consistency is through the development and use of well-designed measuring instruments which anticipate and account for many of the problems discussed previously. For instance, "Triandis argues that a person may have a favorable evaluation of an attitude object, but he may know and clearly indicate on an appropriate attitude measurement instrument that he will not do anything favorable in relation to that object. Accordingly, Triandis constructed the behavioral differential and demonstrated that better predictive validity could be obtained when the behavioral differential was used in combination with the semantic differential, a measure of cognitive and affective components of attitude (Triandis and Davis, 1964)" (Rosen and Komorita, 1970:189).

Some of the most thorough and systematic of recent methodological developments in the attitude-behavior area has been undertaken by two psychologists, Icek Ajzen and Martin Fishbein. They have analytically disassembled the factors which determine a person's behavior into the following components and labeled their strategy the "theory of reasoned action."



From: Ajzen, I. and Fishbein, M., UNDERSTANDING ATTITUDES AND PREDICTING SOCIAL BEHAVIOR, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1980, p. 8. (Figure 1.1 - "Factors Determining a Person's Behavior")

Wicker's summary of 'Fishbein's Theory of Attitude-Behavior Relationships' in his "Attitudes versus Actions" article provides an excellent explanation of the above diagram and highlights the basic propositions of the theory of reasoned action. (Wicker's references are to: Martin Fishbein, "Attitude and the Prediction of Behavior," in M. Fishbein (ed.), READINGS IN ATTITUDE THEORY AND MEASUREMENT, New York: Wiley, 1967.)

Although a number of factors in addition to attitudes have been suggested as influences upon overt behaviors, Fishbein (1967) is the only writer who has attempted to combine several factors into a systematic formulation. Fishbein's theory is an adaptation of Dulany's (1968) propositional control theory.

According to Fishbein, "Rather than viewing attitude toward a stimulus object as a major determinant of behavior with respect to that object, the theory identifies three kinds of variables that function as the basic determinants of behavior: (1) attitudes toward the behavior; (2) normative beliefs (both personal and social); and (3) motivation to comply with the norms [p. 490]." The first component, attitudes toward the behavior, depends upon (a) the individual's "beliefs about the consequences of performing a particular behavior (in a given situation) [p. 488], and (b) his evaluation of these consequences. The second component may be broken down into two categories of normative beliefs: "(1) the individual's beliefs about what he personally feels he should do (i.e., a personal norm or rule of behavior); and (2) the individual's belief about what 'society' (i.e., most other people, his 'significant others,' etc.) 'says' he should do (i.e., a social or group norm) [p. 489]." In Fishbein's formulation, each of the normative beliefs is to be weighted by the individual's "motivation to comply with the norm, that is, his desire, or lack of desire, to do what he thinks he should do [p. 488]." Fishbein acknowledges that other variables may also affect behavior, but suggests that they operate indirectly by influencing one or more of the three basic determinants. Thus, if the behavior is to benefit a liked person, the individual's beliefs about the consequences of behavior--component (1)-- will be different than if it benefits a disliked person. Motivation to comply with a norm would vary, depending upon whether persons affected by compliance are liked or disliked.

Situational variations are also held to have indirect influences on the three primary behavioral determinants. Thus whether behavior is public or private would influence beliefs about the consequences of behavior. Also the normative beliefs would be expected to vary for different situations. Fishbein states that the relative importance of attitudes toward the behavior, personal normative beliefs and motivation, and social normative beliefs and motivation must be empirically determined. He also suggests that

the weights may vary from behavior to behavior, and from person to person (Wicker, 1969:74-75).

In sum, this theory assumes that the generic variable "attitude" is not specific enough to provide behavioral prediction. Empirical verification of the subject's beliefs which form the basis of his attitude toward the behavior, his subjective norm, and the weight which he places on each in any particular situation must be obtained. The combination of these factors are what form the behavioral intention, from which can be predicted the behavior. Ajzen and Fishbein say the following in reference to the relationship between behavioral intention and behavior.

Empirical research (Ajzen and Fishbein, 1970; Ajzen, 1971) has shown that under well-controlled conditions, very high and significant correlations can be obtained between measures of intention and overt behavior. It should be clear, however, that such strong relationships will not always hold. Some of the factors that may attenuate the behavioral intention-behavior relation has been discussed previously by Fishbein (1973) and Ajzen and Fishbein (1973). For example, the measure of intention should be specific to the given behavior and the given situation. The more general the measure of intention, the lower will be its relation to behavior. Another difficulty is that a person's intention may change after it has been measured. Thus new information may become available which influences the person's attitude toward the act, his normative beliefs, and/or his motivation to comply. The prior measure of intention cannot reflect these effects, and hence the observed intention-behavior relation will be greatly attenuated. Clearly, the likelihood of changes in intentions should increase with the time interval between measurement of intention and observation of behavior. (Ajzen and Fishbein, "Factors":3)

6.6 Changing Attitudes and Behaviors

This small section of the chapter concentrates on the changing of attitudes and the changing of behaviors from one type to another. It is not intended to be a literature review; rather it emphasizes the previously discussed theoretical strategy of Fishbein and Ajzen from their 1975 book, BELIEF ATTITUDE INTENTION, AND BEHAVIOR: AN INTRODUCTION TO THEORY AND RESEARCH. The final section of the book is entitled "Changing Beliefs, Attitudes, Intentions, and Behaviors," and provides the material for this section.

Of the traditional theories and empirical studies reviewed in the social-psychology literature on this topic (e.g., Chapter 21, "The Nature of Attitudes and Attitude Change," by William J. McGuire, of THE HANDBOOK

OF SOCIAL PSYCHOLOGY, 2nd edition, Lindzey and Aronson, editors), very few have resulted in consistent or conclusive outcomes. As Fishbein and Ajzen claim:

Most studies of "attitude change" have manipulated some independent variable and have simply measured some dependent variable. It is therefore hardly surprising that research in this areas has led to a large body of inconsistent and inconclusive findings. Given this state of affairs, there is little to be gained from a detailed review of the literature. (Fishbein and Ajzen, 1975:410).

Through examination of Fishbein and Ajzen's work, in addition to some of the more traditional efforts in this area, it seems that the value of the earlier studies is increased in light of the Fishbein/Ajzen paradigm. Therefore, I present this more useful and systematic theoretical framework here.

The basic notion of the Fishbein/Ajzen framework is that it is necessary to distinguish among beliefs, attitudes, intentions, and behaviors. "This distinction is necessary since different factors serve as the immediate determinants of these variables. Moreover, what serves as a determinant in one situation may represent the dependent variable in another resulting in a chain of influence effects that ranges from beliefs to behaviors" (Fishbein and Ajzen, 1975:406). According to their own summary,

...the notion of belief occupies a central role in our conceptual structure. A person's belief about an object was described as the perceived probabilistic relation between that object and some attribute. We showed that the formation of one belief may lead to the development of other inferential beliefs; that a person's attitude is determined by his salient beliefs about the attitude object; and that beliefs about a given behavior, and about the expectations of relevant others vis-a-vis that behavior determine a person's intention to perform the behavior and thus also influence the overt behavior itself (Fishbein and Ajzen, 1975:388).

The theory posits that beliefs are the ultimate determinants of attitudes, intentions, and behaviors. Therefore a change in any of these entities can only be caused by a change in beliefs. According to Fishbein and Ajzen beliefs are affected when the subject is exposed to some new information.

At this point, it becomes necessary to introduce the vocabulary that they employ (Fishbein and Ajzen, 1975:389-390).

* informational item - 'an object-attribute association to which an individual is exposed'

- * proximal belief - "the individual's belief directly corresponding to an informational item"
- * primary beliefs - beliefs "which serve as the fundamental determinants of the dependent variable"
- * target beliefs - "the beliefs which the investigator is attempting to change"
- * external beliefs - "beliefs that do not correspond to any of the informational items provided"

A brief explanation of empirical usage of the framework is as follows. In his investigation, the experimenter can attempt to influence a belief, an attitude, an intention, or a behavior; whichever of these he chooses acts as the dependent variable. In order to change the dependent variable, it is necessary for the investigator to determine its primary beliefs, and designate these as the target beliefs. (It is at least necessary for him to identify target beliefs that may influence primary beliefs.) According to the theory, then, the subject is exposed to informational items which may influence proximal or external beliefs which, in turn, may influence primary beliefs, which always influence the dependent variable.

But, according to Fishbein and Ajzen,

An influence attempt may fail to affect the dependent variable for at least three reasons. First, it may not produce the desired change in proximal beliefs. Second, even when changes in proximal beliefs occur, these changes may have no effect on the primary beliefs. Third, the influence attempt may have unexpected and undesirable impact effects on external beliefs, which can also influence the primary beliefs. (Fishbein and Ajzen, 1975:390-391).

It appears, then, that the influence to which the investigator exposes a subject does not necessarily produce predictable changes in the dependent variable. The appropriate primary beliefs must be identified and targeted. The subject must not only be exposed to the informational item; he must also accept it. And this still does not guarantee that external beliefs won't be affected and have an unexpected impact on the dependent variable. But attempts at identifying primary beliefs, and influencing them (either through the active participation of the subject or through persuasive communication) provide more consistent results in experiments of attitude and behavior change than do the classical studies which manipulate characteristics of the message source, message receiver, or the message itself as independent variables. Fishbein and Ajzen's empirical findings uphold their major premise: Change in attitude or behavior is facilitated only when the subject's salient beliefs about an attitude object are somehow influenced.

6.7 Attitudes and Behaviors Under Crisis

This review has attempted to demonstrate that attitudes are often poor predictors of behavior. There are numerous theoretical reasons why this may be the case. Many of the theories and hypotheses which have been suggested in the study of relationship between attitudes and behaviors are supported by empirical studies in the crisis/non-crisis literature. For instance, Rosen and Komorita (1970:189) draw attention to the distinction between internal and external personalities (as discussed previously), noting that persons who cite an internal locus of control are more likely to act on their attitudes than are persons who are considered "externals." Likewise, Paul Simpson-Housley, author of a study on the perception of earthquake hazard, concludes that "survival in seismic catastrophe could be a positive function of internality..." (1979:17). Similarly, White and Haas claim that "some of the evidence suggests that the extent to which individuals feel they have the capacity to control their environment and fate has important implications for the way in which individuals act upon receiving a warning of a threatening tornado (Sims and Baumann, 1972)" (White and Haas, 1975:101-102).

Empirical studies in the crisis/non-crisis literature lend support to other propositions about the attitude-behavior relationship, including the conclusion reached by Regan and Fazio (1977:41) that "greater attitude-behavior consistency [is] demonstrated by the subjects who [have] direct prior experience with the attitude-object." Such previous exposure to the attitude-object (in this case, a disaster of some sort) may result in the formation of salient attitudes. For instance, the results of a study by Carter, Clark, and Leik, conducted in order to make assumptions about likely responses to hurricane warnings (1979:24-25), indicate that of the respondents who had previously experienced a hurricane and had since changed their minds concerning attitudes toward evacuation, 61% said that they were more likely to evacuate. Similarly, Meltsher's report on public support for seismic safety (1978) states that "...citizens are usually indifferent, but this indifference, for some of them, turns to concern immediately after experiencing an earthquake" (1978:168). And in a study about the effectiveness of a tsunami warning system, Haas and Trainer found that "about half the leavers, when asked, indicate one or more things they would do differently should they receive another similar tsunami warning in the future. The intention to respond faster and more purposefully to a similar warning was indicated by 66% of them" (Haas and Trainer, 1973:2751).

As would be expected, experiencing a disaster causes the respondent to form salient attitudes and intentions that he previously did not possess. As Regan and Fazio (1977:30) so aptly put it, "Attitudes which have been formed and developed through direct personal interaction with the attitude object are maximally likely to influence, and therefore, be good predictors of, subsequent behavior toward the attitude object. Attitudes formed on the

basis of direct personal experience have a stronger dynamic relationship to subsequent behavior than those deriving from external resources." Likewise, according to the analytical scheme developed by Fishbein and Ajzen, beliefs, underlying determinants of attitudes, are "affected" whenever the subject is exposed to some new information. In this case, the new information would be experience of a disaster.

Ehrlich's assertion that "...reliable predictions of behavior can occur only from well-formed attitudes, or in the absence of a well-formed attitude, only when the predicted behavior is close in time to the attitude measurement" (Ehrlich, reprinted in Deutscher, 1973:262) is particularly applicable in disaster research. As Ralph Garrett and Robert Wilson both note, the possibility of experiencing a disaster at some time in the future is not something people generally think about. Therefore, there may be a lack of opinion about such topics since salient attitudes have not been formed (Garrett, 1971; Wilson, 1962). And as Linn notes, discrepant behavior can be caused by "a breakdown of unstable attitudes which are part of a social role that has never been behaviorally put to test" (Linn, reprinted in Deutscher, 1973:85).

As has been noted, many of the theoretical comments offered in explanation of inconsistencies between expressed attitudes and overt behavior involve the normative beliefs of the respondent. Deutscher says that "...a considerable proportion of the variance in human activity can be explained by efforts (conscious or unconscious) on the part of people to bring their sentiments and acts into line, not with each other, but with what they perceive to be the sentiments and acts of others in the immediate situation" (1973:240). And one of the main implications of the DeFleur and Westie study was that "analysis of the beliefs of an individual about the attitudes, norms, and values held by his reference groups, significant others, voluntary organizations, peer groups, and the like may be essential for better prediction of individual lines of action with the use of verbal scales" (DeFleur and Westie, reprinted in Deutscher, 1973:75). Even in the analytic model developed by Fishbein and Ajzen, the respondent's subjective norm is appropriately weighted in combination with his attitude toward the behavior in question. Empirically speaking, the significance of a person's subjective norm is probably especially critical in the study of response to a disaster situation. Numerous studies have indicated that much of the necessary information concerning the prescribed course of action during the threat of disaster or in the surge phase itself comes from family and friends. People typically make an attempt to find out what others are doing in such a situation, especially family and friends as well as "significant others" in the sense of authority figures who supposedly know not only what is actually happening, but what, in fact, should be happening.

Other propositions about attitude-behavior inconsistency may be relevant to the area of disaster research. Campbell's concept of situational thresholds and Deutscher's comments calling for comparability between

situations in which attitude and behavior are evoked are two particularly outstanding ones. Obviously the situation in which an attitude about a disaster is evoked is quite different from experiencing and behaving in an actual disaster situation, and this may account for some inconsistencies between expressed attitudes and actual behavior.

The point to be emphasized is that although attitudes may not be perfect predictors of behavior, they are one of the major sources of public sentiment that we have. (And, as has been suggested earlier, care in the construction of surveys and survey items may minimize much of the attitude-behavior inconsistency which dominates the literature.) Knowledge of public sentiment is necessary in the formation and defense of public policy, as policy makers need to have an idea of how people will react to a situation in order to be able to account for it in their plans, as well as to take advantage of it, if it is in their favor to do so. Survey data enlightens policy makers as to how a particular policy will be received by the public; it is a good indication of whether the policy will sell itself, or if it needs to be sold. And, survey data can provide an index on how much the public knows about a particular disaster situation, and what they will need to be instructed about should such a disaster occur.

6.8 Summary

In sum, it appears that much of the empirical evidence that has been obtained in the examination of the relationship between attitudes and behaviors has demonstrated a lack of direct relationship between the two variables. Thus care must be taken in the interpretation of results, particularly those that are to be the basis of policy recommendations. As Wicker says:

Caution must be exercised to avoid making the claim that a given study or set of studies of verbal attitudes, however well done, is socially significant. Most socially significant questions involve overt behavior, rather than people's feelings, and the assumption that feelings are directly translated into actions has not been demonstrated (Wicker, 1969:75).

But as Ehrlich and others, particularly Ajzen and Fishbein, have demonstrated, it is possible to identify and measure the intervening variables of the attitude-behavior relationship. It is up to the investigators of social issues to insure that their measuring instruments are properly constructed. Researchers who believe that assessing attitudes is an easy way to study overt social behaviors should provide evidence that their verbal measures correspond to relevant behaviors. Should consistency not be demonstrated, the alternatives would seem to be to acknowledge that one's research deals only with verbal behavior, or to abandon the attitude concept in favor of directly studying overt behavior" (Wicker, 1969:75).

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7. THE CONTINUITY OF NORMALCY

Perhaps the most salient feature of patterns of daily existence rests with their relative, but quite robust, continuities. Thus the life of individuals, organizations, communities, and societies tends to keep unfolding in a rather basic and characteristic rhythm of repeated, or nearly repeated, actions.

This strategic patterning of most relevant social actions and of their ongoing dynamics then renders a substantial domain of actions quite predictable. Even individual actions do not vary dramatically from day to day—at least not for most individuals. Each action subserves some purposes and has its own temporal and spatial location in life's rhythms. Collective, or aggregate, actions are similarly largely, if not perfectly, predictable for the most part. This, of course, is a direct byproduct of the fact that individual actions of which the aggregate consists are themselves generally but subtly variable.

The term habituation is possibly quite useful in reflections concerning such individual patterned actions and their corresponding aggregate distributions. Thus most people tend to get up at about the same time each morning (or, if they are nightworkers, tend to get up at a time related to their particular daily cycle of actions), follow their morning routine in much the same way, leave for work at roughly the same time, use the same means of transportation to get to work, use basically the same route between home and place of work, have their meals at about the same time and so on.

A good deal is known about how people spend their time (Robinson, How Americans Use Time: A Social Psychological Analysis of Everyday Behavior, 1977). Suffice it to stress that the forms of habituation, once known, render a great deal of action quite predictable.

If one were to speculate about the key factors which lie at the roots of habituated actions, it would not be unreasonable to argue that their repetitiveness entails some clear benefits for the individual as long as conditions under which the continuities "make sense" prevail. The individual need not spend either time or energy in viewing each day and each circumstance as a "new" one so that it might call for a "new" decision as to what action(s) to take.

Rather, the individual can only ascertain that basic conditions have not drastically changed from customarily encountered circumstances, and then draw upon, even without clear conscious thought or effort, the repertoire of actions suitable to the conditions.

There are, for instance, many different sequences of actions involved

in possible "morning routines." But for a given individual, a particular habituated routine displays its own direct familiarity and there are very few incentives why the routine ought to be modified.

Habituations, in principle, develop fairly rapidly. This can be seen, for instance, in observing how fast people who change their place of residence (whether within a community or across communities) "settle" on a particular route to work; how fast they "settle" on shopping in particular stores even on basically regular days and at roughly the same hours of the day and for basically predictable goods.

Now circumstances under which such habituated sequences and repertoires of action characterize the individual's patterns of daily existence are, indeed properly referred to as normalcy. From one important perspective then, it would not be appropriate to say that "normalcy" conditions generate, or induce, predictable habituated actions for the most part, but rather that the dominant ordering and repetition of actions, their habituated performance, is itself a definition of normalcy as seen by the individual actor(s).

That all individuals on occasions change their routines, whether for the sake of some variety itself or for whatever reasons, does not alter the fundamental thrust of the argument presented. That out of such variations in routinization some new habituations may be formed, again for whatever reasons, also seems rather undeniable, especially if such new actions, "trial-and-error" actions as it were relative to the dominant routines, yield whatever effects or consequences more to the individual's liking than the prior habituated actions appear to have induced.

Even more than individual and resultant aggregate distributions of action, performances embedded in organizational contexts display even higher orderliness and thus predictability. This is due to the observation that in such organizational nexus, the habitation's equivalent is institutionalized. And this means that, more formally, patterns and flows of activities are defined as social roles and such definitions are deeply normative in character: the roles, in their socially binding delineations, are characterized by specification of narrow, or narrower, action repertoires which identify what is prescribed and what is prohibited, what actions are permitted or preferred under what circumstances and with whom and when (The four P's in Merton's sense 1957)

Thus by contrast with individual habitation which results from choices regarding such things as morning routines routes to work or to shop, ways of spending weekends and holidays (where strict routinization is, perhaps, least frequent though it, too is quite prevalent), the individual "enters" a normative fabric of role behavior with rights, obligations, duties and privileges (in the sense of Ralph Linton, 1945) which are not

individualized but which are institutionalized precisely in that 'any' individual in the given role is socially expected to internalize, and act upon, the norms which "govern" the respective role performance.

This, of course, in no way should suggest that forms of habituation are not themselves affected by norms: individual sense of "right" or "wrong" along with the individually acquired social morality (*Sittlichkeit*, in the sense of HEGEL) perspective are key factors in the formation of actions and of action sequences. But habituated actions are an aspect, ever emergent, of an individual's history while role-related institutionalized conduct is an aspect of societal history, of a society's cultural heritage.

Thus there may well exist a wide distribution of habituated actions and action processes (though each particular pattern, once known, renders a particular individual quite predictable. In institutionalized role actions, the distribution is a narrower one in that, within bounds, any individual in the particular role is expected to act in accordance with the normative expectations or suffer the consequences, themselves normatively stipulated, of noncompliance.

The basic institutionalized functioning of organized entities is then again a central dimension in the definition of normalcy; as long as the perception (usually on the part of organizational "leaders") of normalcy conditions prevails, the dynamics of life's rhythm of an organization are themselves characterized by continued enactments of institutionalized social roles on the part of all organization's members.

The onset of a crisis, again by definition, is marked by some sharp discontinuities relative to normalcy: an increased threat (probability of a hazard actualizing) and an increased insult (probability of harm associated with actualized threat) signal the requirement for "emergency actions" of some kind so that ongoing patterns of habituation and institutionalization tend to be disrupted. The "new" situation is thus sufficiently different from the "normalcy" situations of everyday existence as to necessitate decisions and actions oriented to these aspects of the situation that are "new," or "different."

Now one entirely crucial dimension of the normalcy pattern needs to be made explicit though Chapter 2 provides some direct clues already. Latent in the normalcy environment are images of plausible crises. These take the form of identified hazards, of probabilities of their actualization, of probabilities of harm should the hazard actualize to look like it is about to actualize.

Thus some crisis-oriented considerations are themselves, or at the minimum, can be, an highly salient aspect of both habituation and of institutionalization. Thus the individual as well as the organized human

collectivities do not respond to a crisis only once its onset may have been noted but also on an ex ante manner under conditions of normalcy.

To be sure, the societal body politic then allocates some fraction of its resources, human, material, and fiscal, to develop and maintain essentially stand-by capabilities to facilitate a rapid response should a crisis situation come about, and a similar response to a calamity should a hazard actualize "out of the womb" of normalcy in the absence of emergency action and management which crisis expectancy and/or crisis surge make possible.

Since, the potential for a calamity and its crisis antecedant is imminent in the very existence of humans and societies, emergency-oriented social roles tend to be universally articulated, or at least some of them. The Armed Forces, police departments, fire departments, hospitals, insurance companies, Emergency Management Organizations, Civil Defense/Protection Organizations serve as adequate prototypes to be strongly illustrative of the underlying pattern of societal concerns.

It is suchlike organizations which "spring into" action in the way of their own mobilization upon the onset of a crisis and which are then assumed to have the capacity to mobilize the larger body politic (in a surge situation), to perform, coordinate and guide required rescue and relief activities in the aftermath of a calamity (as well as, sometimes, during the calamitous sequence of events) and contribute to capabilities at longer-range rehabilitation.

Whatever else may be said, these are the kinds of organizations, and social roles embedded in them, which have a societal mandate to be prepared, under normalcy conditions, for crises and calamities (and their aftermaths), and which, in a crisis, during and after a calamity, are seen to have the key responsibilities for emergency actions and emergency management.

It would be important to undertake a careful analysis of variegated preparedness levels; of the possible--even very likely--variable preparedness capabilities to cope with alternative hazards; to address factors which bear on varying levels of preparedness and, given an actual crisis and or calamity, on actual coping capabilities.

Here, a more modest undertaking is called for at this time: the study considers only the patterns of crisis-orientation or, for that matter, calamity-perspective on the part of the nation's body politic and it does not deal with organizations that have more direct responsibilities to cope, or with organizations which may come into being--emerge as it were, in the course of a crisis or an actualized calamity.

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8. INTENTIONS, PLANS AND PREPARATIONS

8.1 Introduction

While calamities often occur with some forewarning, they are not considered part of an individual's daily routine. When they materialize, behavior is guided by emergent norms; norms which are distinct from those guiding the more routine daily activity associated with periods of normalcy. Response under such circumstances of crisis therefore lacks the normative guidance required for effective dealing with the calamity. Human societies are complexly interwoven into the fabric of ecological existence. As new technologies develop on top of extant ones, the potential for harm seems to be increasing. While this may be an artifact of the increasing ability to detect hazardous situations or simply a function of media preponderance with these issues, the effect is one that heightens the awareness of the risks faced.

Politically the situation seems no better. Accompanying the daily reporting of conflict around the world is a sense of futility for global and lasting peace. Though we are living longer and with a higher quality of life than ever before, there arise an inevitable recognition of our exastence is fragile. The pervasive belief, however false, is that calamity is probable. With this belief comes the desire to mitigate the hazards that confront us in order to enhance our survival chances.

This is the context in which human societies make plans. The plans are based on the intentions of their people to cope with such occurrences. The aim of such preparedness is the enhancement of survival chances of those affected by the calamity; to reduce harm, lessen property damage and to minimize the loss of life. Whether it be a flood, a forest fire, a hurricane or the threat of nuclear attack, the chances of survival through protective action benefit by emergency planning. The development of emergency preparedness programs is most likely to be effective when placed in the context of potential public response to crisis.

Plans cast in this context can take advantage of any behavioral intentions exhibited by the public. If those intentions are in congruence with emergency preparedness plans, they may be used as the foundation for emergency action. Those not in congruence may be utilized in understanding better the nature of potential oppositional response to actual emergency plans. When essential to the protection of society members, even controversial measures can be demonstrated as effective approaches to protection or avoidance of harm. Such demonstration is considerably easier when the context makes sensitivity to the opposition possible. This chapter examines the intentions to act in a crisis period in order to enlighten the policy-maker in guiding individual intentions and plans for protection.

8.2 Intentions to Act in Crisis

Intentions to act in time of crisis are conceptually similar to intentions as described in Chapter 6, "Attitudes and Behavior". Because they involve a temporal shift from a period of relative normalcy--guided by routine norms--to a period of relative crisis--guided by emergent norms--the transition from intentions to action may be fraught with uncertainty. There are many intervening variables between such intentions expressed under conditions of normalcy and action in a period of relative crisis. They include a change of normative structure, a probable increased demand on potential resources, a reduced time for decisions to be made, and shortened timing of all actions to mitigate and ameliorate disaster. In a sense actions are compressed in the crisis period, and thereby the more informal, yet quite adequate, guidelines for action in normalcy are inadequate for directing emergency behavior. In recognition of this, societies have designated people to fill the role of maintaining emergency capabilities in more routine times. In Nehnevajsa's (1978:34-35) terms:

Most Americans do not know what local civil defense activities have been all about, and they do not know about the national programs or lack of such programs. Nor do they particularly care since they are convinced that appropriate measures are being taken, that the government is responsible and responsive to these regards, and they have a built-in-expectation that appropriate guidance will be provided when needed.

Most people have intentions concerning emergency situations, even though they may be unable to express them or in fact may be quite unaware of them. Emergency preparedness efforts can, and should, utilize these underlying tendencies of the general public. Emergency preparedness will thereby be most effective. Just as emergency plans can serve as surrogates for emergency norms while they emerge, these plans can provide guidance not only for immediate action, but also for the nature of the emergent norms themselves.

Because individuals respond more readily to the familiar it follows that emergency plans can enhance response to impending crisis. If familiarity with emerging plans leads people to "normalize" emergency response, then emergency plans can be made more effective. Mileti (1974:31) puts it this way:

It has been suggested that there is a tendency to act in familiar ways in pre-impact situations. (Anderson, 1968; Demerath, 1957; Glass, 1970; Kilpatrick). In addition, it has been shown that if norms restrict daily action to the family, the probability of evacuation decreases (cf. Clifford, 1956). On the basis of these findings, it is suggested that normative behavioral patterns, or "normative context," is explanatory of response to warnings.

In essence then emergency response, or at least existing plans, become a part of the normative context for action.

Finally, intentions are the closest approximate of action available for those crises which have yet to occur. For the instance of nuclear war in particular, there is no behavioral data available, and thus we must inherently rely on intentions to gain insight into the kinds of activity most likely. If we deny the validity of these data, we are forced to accept even less reliable and less valid empirical input.

8.3 Intentions to Evacuate

Once the public accepts warning of the approaching danger, they must decide if their survival chances are greater should they evacuate the area. The more knowledge the public has, the more informed their decision for evacuation will be. Christensen and Ruch (1978:210-211) found that respondents who received an information brochure on hurricanes were more prone to have a pre-planned evacuation route than those who had not received it.

An informed public can lead to efficient evacuation as well as evacuation to safe areas. Without the appropriate guidance many people could find themselves in areas of equal or greater risk than the areas evacuated--a maladaptive response to the impending danger.

Rogers (1980:30) revealed findings of a 1978 national survey on issues of civil defense (Nehnevajsa, 1979).

Over 200 of these respondents that are likely to evacuate risk areas in a period of increased world tension, did not indicate what their destination might be. However, among those that did indicate the nature of their destination (603 respondents) approximately two out of every three suggest (at least in one sense) adaptive destinations. Approximately 19 percent of these adaptive responses indicate that they will travel 50 miles or less in this spontaneous evacuation.

Findings also indicate that some people say they have "nowhere to go" and therefore they would not be willing to leave their area. But, as Rogers (1980:35) states "On the other hand, the more extreme the respondent feels the current world tensions are the less likely they are to suggest the lack of a place to go as a reason for not evacuating." This points to the necessity for educational programs to inform the public of appropriate action should it be necessary for them to evacuate.

In SPC's (System Planning Corporation) previous report to DCPA, Jiri Nehnevajsa reported the results of the considerable thought

that was given to the question of public cooperation with a relocation order by a panel of social scientists who met during the fall of 1977. Nehnevajsa's conclusion was: We expect overwhelming compliant action with a Presidential order to evacuate. This compliance, in turn, will be the greater:

a. the more it is known that evacuation plans exist b. the more people recognize that they stand a better chance to survive if they leave major risk areas rather than stay in place c. the more popular and respected the President given the order (Sullivan, Ranney, Soli, 1978:65)

Nehnevajsa (1979:18) in asking if people thought there would be enough time to relocate if there were an evacuation program in existence and should it be put to use, found:

*16.3 percent mentioned specifically and spontaneously that they would leave their area of residence in this time period. In turn, 10.1 percent would evacuate in that they did not specify any particular location they had in mind, and 6.2 percent would relocate in that they had a specific place in mind.

*Those who might not move out emphasized seeking a shelter (20.9 percent), adapting their home (6.4 percent)...

Hence, even if a relocation was never urged by any public official, some planning would have to be done to deal with the considerable spontaneous evacuation propensity this reflects.

"In a crisis context, the American people would cooperate well with CD officials. Proper planning and training of officials would ensure that, despite local problems, the overall relocation and ensuing stay-put would be successful" (Sullivan, Ranney, Soli, 1978:9).

So that we may have an orderly and successful evacuation we must have well-informed officials and carefully thought-out, but not overly detailed plans, to follow in times of crisis. This is essential for survival.

8.4 Sheltering

Sheltering is one of those terms with dual meaning. First, when placed in conjunction with evacuation and relocation the sheltering function is one of simply providing care for those people affected. In this use of the term, nearly any housing or other structure to house the evacuees will provide shelter from the elements. Embellished with human systems to provide food, water and some comfort such shelter provides the disaster

victim with a place to stay until the crisis subsides. The second use of the sheltering term arises in the case of nuclear attack. In this instance all of the above features that comprise shelter apply. To this is added protection from radioactive fallout. In essence the second usage is a special case of the first where one of the elements from which protection is desired is radioactivity. Because of the special characteristics of radioactivity, stronger guidance will be required.

Sheltering of the second, special type associated with preparedness for nuclear attack typically takes two basic forms: personal or family shelters, which are often discussed in terms of home basements; and community shelters. Occasionally a third type of shelter to protect against primary weapons effects are discussed in terms of blast shelters. For the purpose of public intentions, however, the discussion of home basement and community shelters will be sufficient.

Every basement would not be an appropriate shelter, nor would all those with adequate basements be willing to house those in need of a domicile. However, studies indicate that there are homeowners who would be willing to take in evacuees. In a comparison of 1968 and 1972 national surveys Nehnevajsa (1976:115), in slightly changing the wording of a question, found in an analysis of expressed intentions, "that helping behavior 'in a crisis' would occur in excess of what could be expected on the basis of 'normalcy oriented commitments.'" Hence, there are those who say they are willing to share when asked in normalcy, but the numbers of those willing to share should increase in times of crisis. It has also been noted that "life and death" rhetoric increases the willingness to share.

Homeowners who are willing to share basements have a greater willingness to share with evacuees from their area rather than with those from outside their area according to a 1968 University of Pittsburgh national survey. Further, information from a 1972 national survey shows

...those willing to allow their basement to be used as shelter for other Americans are also willing, with minor exceptions; to accept shelteree assignment by civil defense officials. (Nehnevajsa, 1976:115)

Nehnevajsa (1974:52) also found that while 90% of all Americans would accept strangers in their homes a similar number "would be willing to go to someone else's home for sheltering."

It is also possible that people will consider using public or community shelters for their relocation.

In addition to showing again that public shelters might be preferred over private ones by about 50 percent of the populace (a

percentage which knowledge of available private spaces would tend to decrease), the data show that people with basements which are suitable as shelters would 'not' go to public shelters, thereby leaving their own shelter resource unused. Less than 3 percent might do so, and another percentage might go to a neighbor's house. This means that suitable basements would, in fact, be available as shelter at least to the residents and, in 78.0 percent of the cases to others as well.

Somewhat more problematic is the result which shows that 28.7 percent of residents 'without' suitable basements might still plan to use them (13.1 percent for themselves only, 15.6 percent on a shared basis). We cannot tell from the data whether these were "marginally suitable" basements or really unsuitable ones. Home basement sharing planning would, of course, allow better self-assessment and better verification by local civil defense officials of the suitability assessment to make it possible to increase public understanding of sheltering.

As to what might actually happen in the course of a nuclear crisis, we do not have a very clear, or convincing, picture. It seems, however, reasonable to conclude that almost all people with adequate basements would use their own basement as shelter, and most of them would share. It seems also reasonable to conclude that 'at least' 50 percent of those who do not have suitable basements would prefer private over public accommodations. (Nehnevajsa, 1976:125,127)

While there was considerable emphasis on the public during the 1950's to build fallout shelters in their homes, few people have actually done so. In fact, Nehnevajsa (1964:295) states:

Without any question, Americans are most inclined to favor shelters when they feel that the Government will pay for the cost. That this may obscure the fact that the Government's funds are, too, their own funds does not seem to alter this prevailing attitude

It would seem that individuals rarely think of fallout shelters during normalcy. That they are not willing to use their own money for shelters is understandable when they are not facing an imminent danger or threat. Their attitudes appear to encompass the 'it will never happen to me' philosophy, therefore making personal money spent on fallout shelters seem questionable.

Another interesting point is the willingness of individuals to put a decal or a sign in their windows to indicate that their home is a shelter. This shows a sincerity on the part of individuals to help those in need.

In the 1972 study, the key questions concerning acceptability of home basement sharing as a contingency plan for potential emergencies have to do with willingness to make one's home available, and willingness to participate in plans which would make private basements an integral aspect of national sheltering. And finally, the question about the willingness of others, as home owners, to allow their residences to be used can provide a clue to the differences in perception of one's neighbors and of the national community.

*Men, somewhat more than women, tend to oppose to home sharing and to basement incorporation into national plans, and they also see other home owners more reticent than do women.

*Blacks, with respect to all three criterion questions, tend to be less opposed than are whites.

*Younger people as well as older ones (those in their 20's and those beyond their 50's) are somewhat more favorable than are respondents in the middle categories (30's, 40's and 50's).

*Married respondents and those who are divorced, are somewhat less prone to be willing to participate, and also more likely to see others as opposing, than are other respondents.

*Respondents with more formal education are less willing to participate, and they also see others as less inclined to share their homes.

*People with higher incomes are somewhat less favorable than are people with lower incomes.

*Those who own their home are somewhat more opposed than those who rent, but both segments see others quite similarly.

*The higher the self-assigned social class, the greater the percentage of those who are unwilling to share their home or to incorporate private home basements into a national shelter system, and the higher the social class identification, the more the respondents feel that other home owners would be unwilling to participate in the program.

*People with other than major party preferences, and people with explicit no political preference (but not independents) are more opposed than are others.

*People with religious preferences other than Jewish, Protestant

or Catholic, as well as those without any expressed religious preference are less likely to favor the home sharing program, and much less likely to feel that others would be willing to accept it. (Nehnevajsa, 1974:24-25)

Although there are those who state that they do not want to share, we have noted that in times of crisis there is a likelihood for a greater willingness to do so. Nehnevajsa (1964:487) states that "...shelter programs are favored by more respondents as a relevant policy than are even steps toward disarmament." It is in this light that intentions to shelter reflect a strong public support for the sheltering type of program. This support is reflected in not only the *intention to share personal (potential shelter) basement space*, but to allow their home to be identified as part of a national plan for sheltering. While this has not been carried out on a wide scale, the underlying sentiment reflected is very supportive.

8.5 Stocking

Different people stock supplies at different rates under normal conditions. Some groups store ample reserve food supplies for their families for up to a year. Other people seem to stop by the store daily to restock their supplies. While belief and habitation are important factors in this differential, it seems reasonable to presume that storage space and resources are also fundamentally important. As Nehnevajsa (1976:117-118) points out:

Under normalcy, our people are unlikely to modify their existing stocking habits. We suggest that it is therefore not too probable that any educational campaign to insure the storage of essentials beyond what families do today would make much of a difference.

Thus stocking of supplies for potential emergency is likely to be an activity engaged in as crisis becomes more imminent.

Nehnevajsa (1974:53) also found "Willingness to stock emergency supplies in face of an emergency, were this to be undertaken at no extra cost to the homeowner or renters is similarly high." Here again we see, as in the lack of desire to build fallout shelters, the public's unwillingness to spend their own money. It is more than likely felt that there will never be a need for the extra food.

Some 30 percent of building owners whose facilities, upon surveys by the Army Corps of Engineers, were found to be able to provide fallout protection actually agreed their buildings to be marked as shelters, to be stocked and, in fact, to be used in any manner required. Thus home building owners actually acted in ways predicted by the attitudinal dispositions of the nation. (Nehnevajsa, 1978:25)

Thus stocking of supplies, particularly spoilable food stuffs, is deemed most appropriate in times of heightened awareness of crisis. In the case of nuclear war, times of heightened world tensions.

8.6 Volunteering

It has been done many times before--neighbor helping neighbor in the aftermath of disaster. Most people can be counted on for providing shelter for those who are homeless, feeding them and helping them with cleanup. Here we will view the public's intentions and plans for civil defense volunteering.

In 1950, some 76 percent of the respondents indicated some willingness to work on civil defense projects. In the total sample, most mentioned "duty and patriotism" as reasons for their willingness (30 percent of the sample constituting some 42 percent of those willing), about 17 percent stated that people ought to help one another, and an additional 11 percent spoke of "duty in time of need."

Willingness to help in civil defense also correlated with willingness to work under dangerous or unpleasant conditions. (Nehnevajsa, 1964:321)

From this it would seem that most people volunteer out of duty to country and countrymen. Also, they enjoy the sense of adventure that working in a dangerous situation would bring.

[Slightly] More than one in two respondents (52 percent) expressed a willingness to work for civil defense if some provisions were made for taking care of children and sick people so that everyone else could do their share in civil defense activities. More than two in ten respondents would, however, prefer to stick with their own family even under these conditions. (Nehnevajsa, 1964:322)

While people are willing to help their fellowman, their first loyalty is to their families. Other obstacles to working on civil defense programs have also been cited.

Some 56 percent of all respondents thought that there were some difficulties connected with their ability to participate in civil defense programs. physical handicaps connected with age health and physical strength were mentioned by far most frequently (20 percent or some 36 percent of those who mentioned some obstructions). Others tended to give occupational reasons (18 percent of the sample) or their family responsibilities (17 percent) as main obstacles. (Nehnevajsa, 1964:321)

Health plays a major role in an individual's ability to volunteer for civil defense.

It has been noted that more people are willing to volunteer during a time of increased tension.

The proportion of respondents willing to work for civil defense was higher the higher the education of the respondent; and, even receptivity to the plan which may explicitly involve family separation was related to education in this manner.(V-7) Education, in turn, tends to correlate inversely with a black-and-white view of life so that the result, if anything, points in directions opposite to those postulated about selectivity of people for civil defense programs.

This is further underscored by the fact that the study also reveals that among the people who displayed a degree of interest and realism (63 percent of the sample) as contrasted with an escapist response to problems of nuclear war (33 percent of the sample), there were substantially fewer people unwilling to work on civil defense programs (17 percent among the more realistically inclined; and 39 percent among the more escapist respondents); and the pattern is similar for willingness to participate even if it involved planned for measures of temporary family separation.(V-8) (Nehnevajsa, 1964:322)

This is to say that those individuals with more education are more inclined to volunteer to work for civil defense programs, and those with a more realistic view of life are, too, more willing to cooperate. It would seem that these people realize the need for such programs more than the rest of the population. One reason for this could be that the more educated, being exposed to a greater repertoire of possibilities in life, feel efficient civil defense planning is important. Further, the more educated also may be the more realistic. Because of their education and view of life, they could see themselves as playing an important role in the development of workable civil defense programs.

That we need instructional civil defense programs is obvious; that we need intelligent, capable and willing volunteers is essential.

3.7 Summary and Implications

Through observation, research and the literature, we have shown that the public does hold specific intentions and plans in the realm of disaster. Yet, it is apparent that not everyone, whether purposely or not, will be able to do in disaster what they say they will do when asked in conditions of normalcy. To ensure the safety of the majority of the public, policy makers

must strive to develop workable informational programs to fit a variety of situations.

There is, of course, no certainty that the nation's actions would be well predicted by the kind of data we have acquired. The actual dynamics of the evolving international situation would have a major bearing on triggering some forms of behavior more than other forms of action. The circumstances more specific to each community at that time, too, would have some effect on the actualization of the types of intentions and expressions of plans which our data address more directly. (Nehnevajsa, 1979:88)

Any plans for evacuation or relocation must then provide guidance as the crisis emerges and thus be sufficiently formal to accomplish this and yet flexible enough to accommodate both a variety of hazards, situations and people. Hence, emergency plans should be guidelines in the sense of providing an outline or checklist of appropriate actions, and remain flexible enough for people to decide and choose among alternatives effectively. If the above discussed intentions and plans for preparedness indicate one thing, it is that the general public has, sometimes implicit, intentions to protect themselves, those people important to them, and even generalized others in the course of crisis. These intentions reflect a strong commitment to protective measures, even though they are not likely to translate directly into action in a crisis. It is in this context that preparedness measures must inherently rest upon the foundation of public sentiment as regards appropriate behavior in crisis situations. Again, both intentions congruent with emergency plans and those not congruent provide important input to policy regarding emergency preparedness. Congruent intentions may be used as the foundation for greater support, cooperation and effectiveness, while incongruent intentions may be used to reshape policy and enlighten policy implementors as to the most likely sources of and responses to opposition.

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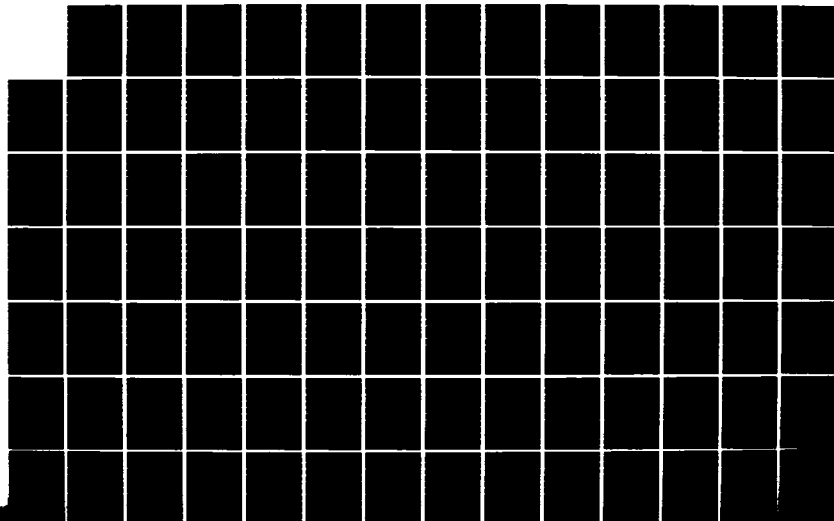
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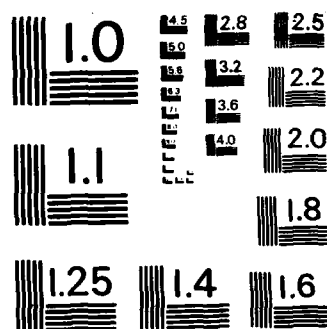
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9. COMMUNICATIONS BEHAVIOR UNDER CRISIS EXPECTANT CONDITIONS

9.1 Introduction

The shift from normalcy to crisis expectancy is a result of alerting cues which indicate an impending threat. How these cues are relayed to the public and the public's response will be addressed.

Crisis expectancy does not entail an "official warning" of impending danger. During the crisis expectant period, the likelihood of threat increases or is believed to increase based on warning cues such as personal observations, communication between friends and relatives, and media reports. The "official warning" is issued in the crisis surge period. At this time warning cues are replaced by warning signals such as an announcement made by the National Weather Service, via the media, indicating the danger of a storm in a specific area and at a certain time. At this stage the public is officially alerted and notified.

However, crisis expectancy does initiate the warning system process through messages which indicate the probability of the event. We will analyze these messages, individual's attitudes and behavior towards the threat, and the media through which they are presented. Behavioral change, decision-making and stress research will be cited to corroborate instances of actual behavior under the threat of a crisis with theoretical hypotheses.

The purpose of warning is twofold: to alert the public to the possibility of danger and to present appropriate actions to be taken. Human reaction to the receipt of the warning cue is the first adaptation to disaster. The extent to which the response is adaptive maladaptive, or nonadaptive is determined by several factors that will be discussed throughout.

9.2 Warning Dissemination

Communicating a warning message can be accomplished through several approaches. The "formal" established channels of communications include: radio, sirens, television, newspapers, and public and government agencies. The "informal" social network of communications is based on personal interaction--face-to-face communications or telephoning between friends, family neighbors, etc. Regardless of the medium, the warning process is composed of three elements: evaluation, dissemination, and response (Mileti, 1974).

Before a warning is communicated it needs to be evaluated. This is achieved by interpreting the threat, collecting data, and using available sources to help determine the scope of the impact as well as its destructive potential. Following the evaluation, the dissemination of the warning takes place. This involves making the decision to issue the warning, devising the content of the warning, and conveying the warning to the public.

Obviously, dissemination involves technological factors, and technological problems, such as the mechanical failure of equipment or the existence of "dead spots" in coverage, are important. Empirical evidence, however, consistently stresses the extreme importance of social factors in influencing the dissemination process. For example, the time of dissemination is crucial. Dissemination will probably be more successful if the alert is issued in the late afternoon or early evening hours rather than during the early morning. The degree of local integration and interaction is also important. In addition, studies have shown that respondents are often not aware of the meaning of such ambiguous warning devices as sirens or flags. In many cases, alternative sources will be sought out as the public attempts to achieve "consensual validation" about the meaning of the alert. Such social factors as these should not be ignored when considering the process of dissemination (Wenger, 1972:51).

Technical and scientific limitations influence the dissemination of warning. For many disasters--flash floods, for instance, it is impossible to accurately forecast magnitude, time of occurrence, or even geographic location.

The dissemination of warning can be deliberate as well as inadvertent:

The deliberate act is 'purposive warning.' The individual received, recognized, verified, and believed the technological warning messages, and then decided to pass it along to others in their social network. The decision to do so is determined by the message process. The inadvertent act is an 'incidental warning.' The message is passed along as a by-product of the process of confirming or verifying the warning message (Landry, Rogers, 1982:5).

Evaluation and dissemination affect the final phase of the warning process--the response or how the public behaves upon receipt of the warning.

9.3 Warning Confirmation

The public's responses to the threat of a crisis are (1) investigative and (2) protective. Investigative implies the seeking of additional information from sources other than the original source, to confirm what was originally communicated. Individuals independently seeking confirmation of a threat is a natural recourse following the initial warning. The public will use informal and formal sources of communication for confirmation but they often search for physical evidence of danger such as checking the sky for the approach of a tornado or watching the river for evidence of rising waters in the case of a predicted flood:

Research shows that people seek confirmation of warnings received over the mass media more often than they do for warnings received from a more personal process, such as from a neighbor or an official. Although independent confirmation is usually sought for the first warning, a second warning often seems to serve as confirmation of the first. So repeated warnings are important. Families that are united at the time of warning are less likely to seek confirmation of the threat than are families that are separated. People who have been in disasters before are more likely to go through organizational channels in seeking further information than are persons without disaster experience. The closer the person is to the place where the disaster is expected to hit, the more sources of information there are for confirmation and the more likely he is to hear confirming warnings by word of mouth (Frazier, 1979:343).

Confirmation can be achieved through social contacts, the media, organizations such as the police or fire department and also a personal assessment of the situation/environment. It is believed that one intent of warning is to provoke the public into pursuing additional information before they act. Generally people will not evacuate or take protective action based on a single warning message. Responses to flash flooding in two communities: Rochester, Minnesota and Clarksburg, West Virginia were used to construct a model to illustrate the effectiveness of warnings in natural disasters.

The third stage of the model focuses on those factors that lead individuals to consider evacuation as a possible alternative response to the flooding event. Standard warning messages issued by the mass media had no effect in this stage. Again, it appears that the primary effects of standard warning messages are to get people to seek additional information. They do not motivate to consider evacuation or to evacuate. Receiving information directly from local officials increased the probability of considering evacuation by over 20 percent in each community. In both sites, however, the most important factor in predicting consideration of evacuation was whether or not the family experienced flooding near their home. This was a major factor in predicting actual evacuation behavior as well (Leik, *et al.*, 1981:42).

9.4 Disaster Experience

Previous experience with a particular crisis has an impact on response to future threats. Disaster subcultures arise in areas that have experienced specific disasters to the extent that the community has created appropriate ameliorative reactions to counteract the event. What evolves is a continuum of experiential disasters which constitute a baseline from which decisions to accept, ignore, investigate, or pass-on a warning message are made (cf. Landry and Rogers, 1982:2).

As noted by Frazier, those individuals with disaster experience will look to organizations for confirmation more than those lacking a history of disaster experiences. In addition, it is not uncommon for those who have survived disasters to minimize the impact of the danger. Sometimes in the absence of reliable guides from the past suggestibility is higher. Whereas those individuals who have a dominant precept as a result of prior disaster experience are more difficult to sway in another direction. This is especially true if there had been situations in which warnings were issued and no disaster materialized. An instance of this occurred in northern Indiana on Sunday, April 11, 1965. The tornado warning system had been activated but the response of the public was of concern rather than protective or investigative actions. Similar warnings had been issued in the past and the tornado had failed to appear.

The WB [weather bureau] and other tornado warning disseminators too often assume a simple stimulus-response type of communication to be adequate. They just issue a warning and almost expect the populace to respond automatically. This fails to take into account the effect of a person's past experiences on his interpretation of the alert (Brouillette, 1965:35).

As mentioned before, evidence of the disaster agent is often used to confirm the threat of danger. A comparison of three hazards: nuclear, flooding, and volcanic activity discovered:

Being able to see physical evidence of the threat in effect clarifies many questions a citizen may have about his susceptibility. Indeed, when one can experience first hand such environmental cues, part of the problem of evaluating personal risk is transferred from technical experts to the citizen (Perry, 1981:58).

9.5 Warning Credibility

The confirmation process establishes the credibility of the message and in turn affects the public's response to the warning. The credibility of the source and the message affects the receptivity of the public to the message and to suggested protective action. There are certain criteria a warning needs to fulfill to be perceived as plausible. Although the criteria varies from one individual to the next, there are some basic facts that are highly significant. Specificity (especially in regards to the exact geographical areas at risk and estimated magnitude of the event), consistency, details, and timing are important pieces of information that will help determine whether or not a warning message will bring about the desired behavioral response. In addition, the public's perception of the knowledgeability and trustworthiness of the communicator also determines if the message is credible.

However, establishing credibility does not insure the public will respond, or if they do respond there is no certainty they will follow the suggested protective actions. The warning process is complex because messages are subject to conflicting interpretations. Individuals will react differently to what they hear depending on who they are, where they are, if they are alone, in a group, or with family, and what they can see. It is not enough to just issue a warning message. Warnings are meant to make certain the public understands the risks involved and act appropriately.

People are more willing to believe and follow instructions received from official sources such as the police or city officials. Furthermore, if the warning is conveyed personally, rather than by an impersonal medium--such as the media, there is a greater degree of acceptability.

Sometimes, however, even personal warnings are ineffective. In the Big Thompson flood state patrolmen individually warning residents to take high ground occasionally found their pleas unheeded and in the Rapid City flood the personal pleas of the mayor at the riverside were ignored by many. These behaviors, however, were probably related to the previously mentioned absence of physical signs of the hazard downstream from the source of the threat. If people see other people around them heeding the hazard warnings, they are more likely to respond than if not. If a person is with a group of his peers, he is less likely to respond to the hazard warning than if he's with his family. (Apparently, there can be peer pressure to underestimate the hazard or scoff at danger) (Frazier, 1979:344).

The social context an individual is in when he/she receives a warning does have an impact on their response. Warning messages received from relatives (often by telephone) are perceived as more effective than those issued over mass media even though the media notifies the largest number of people. However, "While only 6 percent of the residents in the Three Mile Island (TMI) area expected to receive their first warning from friends or relatives, actually between 25 and 18 percent (cf. Brunn *et al.*, 1979) are reported to have obtained their first warning through their social network, that is, from others rather than from the media." (cf. Landry and Rogers, 1982:6). Families have previously established authority structures which are important during crisis expectancy. The search for a credible source to inform and help potential victims of a disaster is of primary concern. Families already have the uniformity that is necessary to successfully adapt to the threat of a crisis.

9.6 Communication and Behavioral Change

The relationship between communication and behavioral change in a threatening situation is a volatile one with many qualifications. The warning

of an impending crisis and the psychological stress experienced affects an individual's search and appraisal strategies. "Psychological discomfort stimulates behavior whose goal is to reduce the individual level of uncertainty regarding the perceived threat and thereby the level of discomfort" (cf. Landry and Rogers, 1982:3). It has consistently been demonstrated that effective persuasion enhances communicator credibility. Janis and Feshbach (1953) are pioneers in the study of the effectiveness of fear arousing communication. They found that the effectiveness of persuasive communication decreases with the increase of stronger fear appeals. Stronger fear appeals evoke an emotional reaction in the public that needs to be counteracted by reassurances. Often these needs are not fulfilled by communicator--leaving the public in a state of emotional tension. "When fear is strongly aroused but is not fully relieved by reassurances contained in a mass communication, the audience will become motivated to ignore or to minimize the importance of the threat." (Janis and Feshbach, 1953:90).

If the communicator is lacking information or is ambiguous, in regards to actions to be taken following the issuance of the warning, the public's response will be maladaptive or nonadaptive. Nonadaptive behavior consists of those actions that suggest an indifference or lack of concern towards adaptive coping mechanisms that precede an impending crisis. Maladaptive behavior includes actions and perspectives that would jeopardize survivability such as panic, looting, or spontaneously evacuating from one risk area to the next. During the crisis expectant period individuals seek an alternative normative structure to give meaning and form to a chaotic situation posed by the threat. For this reason, the communication network needs to be reliable and knowledgeable. In a study of four communities affected by ashfall at Mt. St. Helens, the discovery that:

The initial warning about the ashfall issued by the Washington State Department of Emergency Services had absolutely no utility at any of the community study sites. In each case, no preparatory action was precipitated by the message. Dissemination of the warning was stalled quickly in the chain of command. Recipients of the teletype warning felt that it did not apply to their community, or they waited for more extensive confirmatory information. It can be suggested that the lack of response was due, in part, to three deficiencies of the warning message: first, the message was not specific about areas to be affected by ashfall; second, no specific precautionary actions or procedures were prescribed; and third, the warning lacked a sense of urgency. Thus, the clerk at the Cheney City Police Office, uninformed of the significance of the information, simply shelved the message, believing that it was probably inapplicable to Cheney (Warrick *et al.*, 1981:104).

The research conducted by Janis and Feshbach has remained

controversial. Numerous studies testing fear arousal and attitude change have been performed. The decrease in the effectiveness of communication coupled with the high level of fear appeals has remained a problematic concept. Research by Haefner (1956), Janis and Terwilliger (1962) are in alignment with Janis and Feshbach's hypothesis. However, subsequent studies (Berkowitz and Cottingham, 1960; Dewolfe and Governale, 1964; Leventhal and Nile, 1965; Leventhal and Singer, 1965) point out discrepancies in this theory. For instance, Berkowitz and Cottingham studied the interest value of communication in attitude/opinion change. Interest value, they felt, was a variable Janis and Feshbach had not incorporated into their research.

People required to listen to or read an uninteresting message undoubtedly suffer some frustration, particularly if the message is long. As in the case of other frustration reactions, the bored audience might respond by 'withdrawing from the field,' i.e., not attending to the communication, or by directing hostility toward the communicator. Thus, it is likely that relatively high interest value is necessary but not sufficient for creating opinion change as through mass communications, either because low interest produces 'inattentiveness or because the frustrated audience, venting its aggression, disparagingly dismisses the entire communication' (Berkowitz and Cottingham, 1960:37).

Janis constructed five possible coping behaviors to the threat of a crisis as part of his conflict--theory model: unconflicted inertia, unconflicted change to a new course of action, defensive avoidance, hypervigilance, and vigilance (cf. Janis and Mann, 1977). The model illustrates basic patterns of emergency decision making evoked by warnings of authenticated impending danger. The responses are governed by the perceived magnitude of expected losses. Unconflicted inertia arises when an individual perceives that the risk is not serious enough to warrant protective action. Under stress there can be a tendency to isolate oneself from the stress and attempt to continue with familiar attitudes and behaviors that were reliable under past circumstances. Individuals can become aggravated when it becomes obvious that their old patterns are not working in this new situation. Unconflicted change to a new course of action occurs when the individual has evaluated the risk and decides to take an action that appears more adaptive to the situation.

In a threatening situation in which all of the alternatives are indicative of significant losses for the individuals, he/she experiences a sense of futility which leads to defensive avoidance of threat cues. Defensive avoidance can include the inability to be motivated to search for additional information, selective inattention and forgetting, distortion of the meaning of warning messages, and the creation of idealized justifications that minimize the negative.

Faced with such masses of information, people may follow a process of 'anchoring' in which they begin with one rough estimate and then adjust it as more information comes in. They 'believe they have a much better picture of the truth than they really do.' (Slovic *et al.*, 1974), and this generally leads to underestimation of the phenomena. Starting with a view of the possible severity of drought based on previous experience, they adjust their assessment of any new data toward that anchor. Citrus growers in Florida (Ward, 1974) and apricot/cherry/apple growers on the slopes of the Wasatch mountains in Utah (Jackson, 1974) appear to consistently underestimate the probability of severe frost. Jackson observes that the probability of total destruction (less than 22F after April 15) is .32, but only 4% of the growers indicate that they expect total destruction once every three years (Ian, Kates, White, 1975:98).

Once a dominant precept is formed cues that coincide with that precept are highlighted.

Hypervigilance is a form of stress which in its most extreme form manifests panic. It usually surfaces when the threat is imminent and the individual feels very limited in defensive action options. Symptoms of hypervigilance include the inability to recognize all options, a reduced memory span, and simplistic thinking. Vigilance refers to coping with danger effectively.

In most of the experiments dealing with stress and opinion change, the fear manipulation affects more than the fear level of the subjects; the communication differs across stress conditions. The result is that subjects in different stress conditions are exposed to different communications as well as being subjected to various stress levels. It is difficult to conclude that differential attitude change between stress conditions is, in fact, due to differing stress levels, and not to differential communications (Sigall, Helmreich, 1969:71).

9.7 Media Perceptions

The media's perception of how individuals will react under the threat of a crisis is significant when communicating messages.

Probably the most widespread myth about disasters is the belief that people will panic in the face of great danger. As a result of this belief, officials put out warning bulletins most cautiously. They frequently withhold warning to the last minute in the belief that the inevitable irrational panic is only slightly less damaging than a disaster itself. (Quarantelli and Dynes, 1972:67)

In a study of 72 radio and TV stations in 12 cities it was found that 72% were concerned that people would panic in response to a disaster situation and therefore news of such an event needed to be handled in a special manner. In regards to civil disturbances there was a similar desire to keep excitability to a minimum.

Even in large-scale disasters, when emergency warnings are given to large numbers of people, hypervigilance and the accompanying symptoms of severe cognitive impairment have seldom been observed, despite the readiness of some influential journalists to raise the specter of mass panic. (cf. Baker, Chapman, 1962)

The discrepancy between the public's actual response and the media's expectations may be responsible for the media's questionable credibility. The media's representation of disaster is biased because of the anticipation of audience reaction. The same holds true for local government and public officials. In Brouillette's "A Tornado Warning System: Its Functioning on Palm Sunday in Indiana" he analyzes the factors that affected the communication of a threat. There was a delay in relaying the warning of the tornado because the civil defense director waited until he saw physical evidence to confirm the facts. When the director did contact the police there was no notification made public. The Chief of Police cited his reason as being afraid of panicking the public.

My idea about warning is different from some people.... Some want to alert everybody (RIGHT) now. An alert is alright, but it has the tendency to panic people a lot of times.... I think you should alert your first aid centers, your CD, and things like this...but not the general public too much.

I don't like to panic them. I know some people personally, that the minute there's a sign of a tornado or (that there) might be a tornado....they panic right now (Brouillette, 1966:21-22).

Panic, for many people, implies chaos, a breakdown of social structures, and a disregard for other individuals. "One could theorize that public officials stand to lose a great deal in a panic situation: their identity. If the social cohesion collapses, their role is lost. In other words, officials may fear to use their power (to warn) for fear of losing it." (Koster, 1978:81). However, it has been demonstrated that mass panic flight is rare, more often than not there is a controlled withdrawal in an evacuation situation. If anything the majority would tend to reject an evacuation plan. As noted before, individuals, upon receiving a warning message, especially via mass media, will look to confirm the message before they act.

9.8 Summary

Communications behavior during the crisis expectancy phase focuses on the confirmation of warning cues. Once a message has been issued, indicating the probability of an event, individuals will seek confirmation of the threat, usually from a different source than the one that initially communicated the information. If an individual receives a report, via the radio or television concerning a possible crisis event, he/she will attempt to confirm that message through conversations with peers, family or through authority figures such as the police, the local civil defense office, or the weather bureau. However, to insure that the public will seek confirmation the warning cues need to be 1) credible in terms of content and source; 2) provide anticipated consequences of the event, assuming it will materialize; and 3) possibly suggest preparedness steps that can be taken during the crisis expectant phase.

The effectiveness of warning cues is important in that specific attitudes and behaviors will develop as a result and continue into the crisis surge phase, if the need for an official warning arises. Thus, the public's reaction to the communication of an official warning will be affected by their confidence in the warning cues relayed during the crisis expectancy phase.

1) The credibility of a message in terms of content and source will be judged by the public which will in turn develop their own probability dimension and determine appropriate coping behaviors. As noted in the chapter, people do not take protective action based on a single warning message. However, once the probability of a threat is confirmed, a dominant precept forms that will guide future responses.

Even if the disaster agent is detected, forewarning can occur if an adequate message dissemination system exists for delivering the warning to the threatened population. In terms of consequences of disaster impact, warning permits time (the precise amount of which may vary greatly) for preparations and safeguards which can to some extent: (1) reduce deaths and injuries; (2) decrease the destruction of kin and friendship networks; and (3) reduce property damage (Williams, 1964:97-102). Also as Fritz and Marks (1954:35) have indicated, an adequate period of forewarning permits a degree of psychological preparation for the disaster impact. (Perry and Lindell, 1978:108)

2) Having confirmed warning cues the transition from crisis expectancy to crisis surge is less problematic if variables such as specificity, timing, and the anticipated consequences of the threat were made apparent. The possible outcomes of the event are significant especially in situations without prior disaster experience. As mentioned the existence of a disaster subculture creates a specific mind set in community.

Where disaster exists as a threat before it strikes, adaptation made during the predisaster period influence reactions to an ability to cope with the effects of the disaster. Where threat has existed for some time, the warning is a signal for immediate mobilization of resources held in reserve for the emergency. To be sure, the collective capacity to withstand stress is now subject to its ultimate test, but manifestations of demoralization and of collective defenses will already have occurred in the period of threat and not only in response to the impact (Lang and Lang 1964:609).

Given the actual dynamics of a crisis expectancy situation it is difficult to gauge the seriousness of a threat. Likewise, anticipatory consequences and coping behaviors will be nonspecific.

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10. COMMUNICATIONS BEHAVIOR UNDER CRISIS SURGE CONDITIONS

The crisis surge phase begins with an official warning or alert. By "official" is meant originating from a governmental agency (e.g., National Weather Service). Official warning includes: (1) information about the type of event, (2) geographical impact zone, (3) time of onset, (4) duration of event, and (5) appropriate behaviors to reduce harm to persons and property. This chapter will discuss communications behaviors of the general public under crisis surge conditions.

In the preceding chapter, "Communication Behavior Under Crisis Expectant Conditions," the following findings were presented:

1. Crisis expectancy is a phase of the crisis continuum in which normalcy conditions change due to the increased likelihood of a crisis event. Subsequently, the public's perception of the event is heightened. This change is produced by cues in the physical environment or by information provided by the media. The introduction of such information stimulates attention and concern among those who receive it. Frequently individuals cope with their uneasiness by gathering more information through public and private contacts. This process is known as "warning confirmation" and entails assessing the validity of the threat and the level of danger. Confirmation is the first potentially adaptive behavior. Thus confirmation of threat induces alterations in otherwise routine daily behaviors.
2. Message characteristics during expectancy periods are influential in the creation of adequate adaptations to a developing crisis. The message's specificity in regards to crisis type, time of impact, precautions, appropriate level of urgency, as well as the length of the message, affect the public's reaction to the possibility of a crisis event.
3. Effective warning dissemination does not solely result from attention to message specifics. It arises from the interaction of these with the community's method of coping with the event. The community itself has a coping pattern which will affect the dissemination process. This is not a pattern under the disseminator's control. Therefore an inadequate understanding of the community's reaction to warning messages increases the probability of stimulating maladaptive behaviors.
4. Communications among the general public during a crisis expectancy phase predominantly functions to confirm the validity of the cues presented in the initial warning regardless of the source.

5. Any decisions regarding the existence of a potential crisis, specifics about its character, or decisions about adaptive behavior are tentative pending the receipt of additional communications, cues in the environment, or observations of the behaviors of others.

We have stated that a surge phase commences with an official alert that a crisis is occurring or will occur. The alert presents the receiver with an additional cue. This cue may be indicative of a suggested change in behavior that would be of a protective nature.

Disaster research has not typically divided crisis events into normalcy, expectancy, surge and event categories. For this reason, a discussion of communications behavior in and across the crisis phases is problematic. Primarily the focus has been either increasing the effectiveness of warning or outlining the behaviors of warning disseminators in the media and in various public safety organizations. The questions concerning the communications behavior of the general public during surge are not greatly detailed. Nonetheless, there are a few very general propositions which Mileti states as follows:

From all past research efforts three important notions about how people respond to warnings have emerged: (1) even though people may be 'listening' to the same warning message, everybody 'hears' and 'believes' different things; (2) people respond to warnings on the basis of how what they 'hear' stimulates them to behave, and (3) people are stimulated 'differently' depending on who they are, who they are with, and who and what they see (Mileti, 1975:18-19).

Warning, similar to threat, (see Chapter 6) is a transactional variable, whose actual meaning arises from the content of the message, its context, and the social background of the recipients. The shift from expectant to surge lies in an official recognition of the crisis and publication of relevant facts. Communications behaviors do not change as a result of official warnings. Rather, the need to confirm is heightened. Therefore, the authority accorded the agency issuing the alert, the timing of the message, and the social context in which it is received become paramount factors affecting the response.

Frazier notes that the general finding of most research on warnings:

...is that people are more likely to believe warnings from official sources such as the police, state patrol, or fire department. Warnings delivered in a personal manner, such as a policeman or neighbor coming to the door, are usually more effective than those communicated by an impersonal medium, such as the radio (Frazier, 1979).

Leik et al. (1981) found that in tornado prone areas "The public assesses their risk to tornado threats based on the official information they receive and their efforts to confirm these initial messages" (p. 239). Perry (1981) discussing volcanos, floods, and TMI cited "advisories from officials" as highly critical reasons for choosing to evacuate." (see also Drabek and Boggs, 1968.)

The crisis surge phase represents a unique potential to promote adaptive behavior among the general public. The receipt of initial warnings arouses a pervasive search for confirming evidence. Representatives of authority are among those expected to provide direct, accurate facts and recommendations. The official announcement of what actions people should take is a key factor in the promotion of protective decision-making by the general public as is the agency's history for accuracy. As reported by Wenger:

...the information must be 'official' in that its source should be identified with organizations and individuals widely defined as 'authorities.' Rumors are a present phenomena in the period of uncertainty preceding impact. When alert messages are interpreted as 'unofficial rumors,' adaptive action is not likely to result (Wenger, 1972:52-53).

Quarantelli, Baisden, and Bourdess (1980) explain:

One theme in this literature is that, for action to occur, potential evacuees must decide that they 'can do' something about the perceived threat. Perception of a personal and real threat is not enough to generate withdrawal. The persons involved must also come to the conclusion that they can evacuate. (Quarantelli, Baisden, and Bourders, 1980:86).

Public safety agencies must remember that part of the threat perceived by individuals is also the threat to their families. Generally, as evidenced in the upcoming discussions of social context, there are communications behaviors which people will undertake with family and friends before proceeding with protective behavior (Rosenthal, 1978). Should the surge period be shortened by a delayed warning, these communications may be incomplete and protective actions may be delayed. Frazier comments:

It is clear from the evidence I've already mentioned that people seek confirmation of warnings, and it seems also true that at times of danger people feel a great need to share their feelings and available information with friends and loved ones. So it is hardly surprising that a first impulse on hearing a disaster warning is to jump to the telephone. Anyway, as Quarantelli says, it may be a good way to spread the news, especially when you remember the

fact that warnings are taken more seriously when delivered in a personal way (Frazier, 1979:346).

The timing of an official warning is as significant as the authority it represents. Research has discussed the problems associated with the time of day that a warning is issued (Hill and Hansen, 1962). Another aspect of the time factor, of particular importance to the surge state, is the amount of time between the receipt of the official warning and the impact of the event. Knowing that our ability to predict the onset of events and their damage potential varies widely according to the event: it is important to remember that delaying a warning for fear of inciting panic can be highly destructive. Koster notes:

The warning literature shows a strikingly high number of instances where public officials temporized, or delayed the issuance of a warning for fear of causing a panic. Occasionally this fear seems to have caused the officials to couch the warning in cautious, or comforting terms. This tone is at odds with the content of the warning, and confuses the listener. In essence, the official has violated the guidelines for an effective warning: to be clear, unambiguous, and to have no disagreement about the severity of the situation (Koster, 1978:30)

The significance of a decreased amount of time between surge and event lies in the need to satisfy certain psychological processes before effective adaptive behavior can begin. Warning confirmation involves information gathering in many areas: environmental cues, media, word of mouth, and telephone conversations. All of these have to be accomplished before the actual planning begins. To issue an immediate advisory to evacuate may bring about highly maladaptive behaviors.

The social context is the people an individual happens to be with when the warning occurs. Worth and McLuckie (1977) highlight its importance when they state that individuals "...responded to the warning process as a member of a primary group." (p.72). Quarantelli and Dynes propose that:

Given the social and group context in which warnings are received, it is not surprising that the 'context' rather than the 'content' of the message is the important factor in influencing the response. That is, instead of responding directly to the warning message, there is an attempt to assess its validity on the basis of how one knows others react to it. One study reported that 'Friends, relatives, and neighbors served as an important confirmation mechanism. As might be expected, interaction with neighbors was largely face-to-face, whereas friends and relatives were usually contacted via telephone.' Interestingly, authorities are seldom contacted. In the study just alluded to, only 9% of the

households attempted to check with officials in the community. Put another way, most families warned of danger looked to see how others were interpreting the warning messages. The validity of its content was filtered through a context of activities of personally known others. (Quarantelli and Dynes, 1976:234)

These findings are repeatedly replicated (see Quarantelli, Baiden, and Bourders 1980, Perry, 1981, and Perry, Lindell, and Greene, 1980).

Leik et al. (1981) in a study of surge conditions found that people did not seek additional information apart from environmental cues and observations of the behaviors of neighbors prior to deciding to evacuate.

10.1 Summary

The crisis surge period heightens the discomfort accompanying threat through its official recognition of impending disaster. At the same moment, however, surge conditions present the opportunity to mitigate harm by provision of specific, uncluttered information about the event and appropriate actions. Emergency management officials can foster widespread adaptive behaviors by acting upon the knowledge of the following pervasive public communicative behaviors:

1. An official alert of impending disaster provides the additional cue during a warning confirmation process which induces the general public to begin making decisions about possible protective behaviors.
2. People will attempt to communicate with family and friends before they engage in self-protecting behavior. For this reason, the timing of official warning and therefore the length of the crisis surge phase are crucial to the promotion of adaptive behavior. In other words, the general public needs time to communicate with their loved ones before they act on official warning suggestions.

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11. BEHAVIORAL CONTINUITIES UNDER CRISIS EXPECTANT CONDITIONS

11.1 Introduction

The disruption or potential for disruption of physical and social environments created by disasters also creates stress for the individuals confronted. Beyond the life threatening nature of these events, (and in part because they are life threatening), expectations are altered to reflect appropriate behavior. In the early crisis expectant phase no official warning of impending danger has occurred, but some clues have served to heighten the awareness of the potential danger (e.g., the smell of smoke arises, storm clouds appear on the horizon). The stress created by these clues and any associated changes in expectations is sometimes relieved through activity. Some of these activities will be nascent and emerge because of the potential danger. Certain daily functions will continue and others will not. Some actions will be adaptive in the sense of enhancing readiness, while others will be maladaptive in the sense that they will be frivolous, waste time or resources (though this judgment may arise only after the fact). Adaptive behavior seeks to avoid, mitigate, inform, protect or otherwise prepare for the insult, while maladaptive behavior, (may seek the same objectives), turns out to be frivolous or wasteful (Nehnevajsa, 1979; Rogers, 1980; and Thomas et al., 1980). This chapter attempts to describe the types of activity likely to continue and discontinue in the crisis expectant phase.

11.2 The Principle of Continuity

Some early disaster research suggests that human behavior during and after a disaster is an almost exclusive result of the disaster itself (cf. Quarantelli, 1977). This view implies that behavior in disasters is unique--a manifestation of the disaster agent. Mileti et al. (1975) argues that this view precludes research's ability to accumulate or lead to a meaningful theoretical framework for studying behavior in disasters. Disaster researchers have maintained that behavior prior to the disaster is probably the best predictor of behavior during and after the crisis.

Not only do the studies generally indicate that relatively little organizational change occurs as a direct result of a disaster but such changes and shifts as do occur in structure and functions were in most cases, already manifest in the pre-disaster period. In other words, disasters do not seem to initiate major organizational changes. At most, they appear to accelerate existing trends and, in this sense, reflect the principle of continuity. (Quarantelli, 1977:34)

The principle of continuity can be applied to the behavior of individuals, as evidenced by studies of mental health (cf. Taylor et al., 1976 and Taylor, 1977b) and local official effectiveness (cf. Wolensky, 1975).

Nehnevajsa (1978) points out that for very good reasons behavioral responses during normalcy periods are at considerable variance with reactions to actual emergencies. Simply put, as the behavioral norms adjust to the demands of environmental and social disruption, patterns of behavior also adjust. The central factor in this adjustment lies in the fundamental routinization of behavioral patterns in general.

...most of us are attuned to repetitiveness of life and of existence, and the repetitiveness is patterned and institutionalized in the form of norms which govern, or channel, our actions. Repetitiveness itself, and its institutional manifestation in an ordered society, evolves into attitudinal, knowledge and action propensities which are most compatible with the maintenance of that order, that is, with the normalcy of relative stability to which we grow accustomed. (Nehnevajsa, 1978:17)

Nehnevajsa (1978:18) continues.

Most of us go on with our lives along fairly well routinized channels of existence under the premise of a reasonable orderly unfolding of society and of the universe. At the same time, we delegate emergency responsibilities to institutionalized, and therefore also routinized, 'others' in our midsts so that we can have a collective, as well as an individual capability, to manage the unpredictable but likely catastrophies which befall individuals, families, communities and the nation. But having so delegated responsibilities for the management of emergencies to others, we feel that we need to pay little attention to the respective problems as long as everything goes on in a normal way. We actually care little about either knowledge or behavior which would be essential to minimize the impact of a variety of natural and man-made insults upon us unless the circumstances force us to do so.

Therefore, individuals will rely on institutionalized emergency response for warning; little individual action will occur until these institutionalized emergency mechanisms are activated. The clues that indicate the potential for danger must be strong to warrant altered behavior.

These positions appear to be opposed. They are focused on separate issues. The principle of continuity as specified by Quarantelli (1977) points to the continuity of behavior at both the organizational and individual level. Continuity here implies behavioral consistency with prior periods. Nehnevajsa (1978) on the other hand addresses aggregate individual behavior or social structural effects and suggests the circumstances under which individuals begin to alter their behavior to 'accommodate' impending crises. Both suggest that attitudes and behavior prior to impending disaster are translated into actions during and after the crisis in systematic and patterned ways. The objective here is to explore some of these continuities

and discontinuities as reflected in behavior during the crisis expectant phase.

11.3 Continuation and Discontinuation of Behavior

As a crisis is realized in the crisis expectant phase, people search for, categorize, and associate meaning with the various clues available at the time. The "message" of this evidence depends on 1) what clues are discovered, 2) how they are categorized, and most of all 3) the meaning they have for the individual. Certainly if clues are not found, they have no relevant meaning. Furthermore, if a clue appears to be unrelated or is otherwise of low salience, the meaning attributed to that clue will reflect this salience. The meanings which are attributed to these clues are of primary importance because they determine behavior during the crisis expectant phase. What is going to happen? when will it happen? and how will it effect me, my family or my community? become essential issues of concern.

For disaster agents that allow some forewarning time the:

...crisis state may begin prior to impact as the traditional, institutionalized structure is no longer collectively defined as an appropriate guide for behavior in the face of the impending agent. In other cases the impact itself may produce the crisis conditions. In either case, certain basic alterations in community functions and structure can be observed to occur. (Emphasis added, Wenger, 1978:29).

This appears to indicate that people becoming assured of the reality of the impending danger are more likely to alter their daily routines as described by Nehnevajsa (1978) to 'accommodate' the crisis. Hence, both the continuity and discontinuity are dependent upon the nature of the 'message' attributed to the clues recognized by the individual and confirmed by significant others in the social network.

The foremost consideration in the alteration of behavioral and attitudinal patterns is the saliency of the impending threat. Or as Nehnevajsa (1978:15) addresses it regarding the:

...questions of war and peace, and thus in relationship to emergency preparedness against the contingency of war, such problems revolve entirely around the assessments of extant levels of threat and the implications of the existing threat patterns. With regard to natural or other man-made disasters, and thus in relation to preparedness systems other than those which address the nuclear war problem directly, the fabric of behavioral responses is also mainly influenced by visibility and acuteness of

various hazards and the appropriateness of alternative behavioral responses to such hazards.

During this period the system of functional priorities begins to emerge. Wenger (1978), Dynes (1970) and Wenger and Parr (1969) propose that impending disaster tends to alter the functional priorities of the people in communities. These priorities reflect the changing needs structure of the people and the community. In addition, they imply that the emergent behavioral norms associated with a disaster stem from already existing normative structures, however, as Wenger (1978:29) explains it:

Many of the community's activities which serve the more traditional needs are suspended, and only those aspects which have clear relevance to the immediate crisis situation continue to have high priority.

Furthermore, activities considered of immediate relevance in the crisis expectant period usually reflect a core of values held in common (e.g., protection of community members or life in general).

Many of the activities and attitudes are concerned with the present. Quarantelli and Dynes (1976:142) state:

Disasters lead to a focusing of attention on the present. At least in the emergency period, the past and the future are temporally laid aside. In this respect a disaster provides a degree of liberation from many everyday concerns, which does not always occur in other kinds of large-scale stress situations.

Quarantelli and Dynes (1976:143) continue that people "...concentrate attention on the immediate day-to-day, if not hour-to-hour needs." This indicates that during a crisis expectant period people focus increasing attention on those activities that, due to the threat, have become more salient. Behaviors that address short-term, immediate needs are likely to take place. Hence, activities that are underway during the emergence and recognition of danger clues may continue. In so doing they meet otherwise unfulfilled immediate needs. If immediate threats to life and property are identified, however, adjustments to the normative behavioral priorities will be made in such a way as to address these omnipresent needs.

While discussing plans that may be implemented in crisis expectant periods as they apply to the threat of nuclear war, Nehnevajsa (1978:34) points out that

...the evidence suggests that 'simple' and 'inexpensive' steps are either taken or at least considered, whereas 'more complex' or 'more expensive' measures tend to be disregarded until there is an

essential requirement for them, and the requirement becomes a function of the evaluation of the situation itself.

We suggest that considering the continuation and discontinuation of activity in the crisis expectant period, behavior reflects a certain degree of investment in terms of commitment, value, complexity or cost associated with the activity. The greater the investment related to an activity, the more salient, threatening, or imminent the crisis must become for the activity to be discontinued. This is particularly true if the disruption associated with the crisis should lead to, or be viewed as leading to, a loss of investment in the activity. For example, if the preparation for the main meal of the day is nearly complete and some preliminary clues of impending hazard emerge, the family is likely to prepare and eat that meal. On the other hand, if the family had planned to go to the park for an outing, they might well cancel it in favor of an activity that makes monitoring the situation easier. Furthermore, if the activity and the impending hazard seem to coincide in the sense of happening at the same place (e.g., as in a picnic at a riverside park and a flash flood), the activity may be altered to accommodate the impending hazard (e.g., the picnic moved to another location). Continuation and discontinuation accordingly reflects the degree of investment in the activities currently underway. Furthermore, they may be adapted to accommodate the hazard if they are viewed as being more effective.

To some extent activity in the crisis expectant phase depends on the perceived effectiveness of the current activity, any alternative activity and the marginal gain or loss between the alternatives. Hence, even relatively minor investments in activities will continue to the extent that alternative behaviors are not more effective in dealing with the potential crisis. For example, if an individual is filling the family car's fuel tank with gasoline when the first clues of crisis onslaught are recognized, this activity is likely to continue, particularly if evacuation by automobile is an effective way of dealing with the impending danger. One can expect then that current activity will continue because in so doing individuals are not less able to deal with the potential crisis. In fact they may be strengthening their position should it become necessary to avoid the impending hazard.

The recognition of hazard is especially important in the crisis expectant period, since it is in this period that no official warning has been issued. Furthermore, one must recognize that if people judge:

...the probability that the threat will materialize to be so small as to be negligible ('It won't happen here!') or if [they judge] the magnitude of the danger to be low enough to be tolerated ("Nothing bad will happen to me or mine!")... (Janis and Mann, 1977:37)

The risks are likely to be judged as not serious enough to require protective

action. Janis and Mann (1977:37) conclude that given this assessment the situation people.

...will complacently decide to continue doing whatever [they have] been doing, ignoring the warning and the accompanying recommendations to take protective action.

Of course, in the crisis expectant period many of the warning clues turn out to be false signals, and in this sense "...a negative appraisal is realistic and justified..." (1977:37) (in fact adaptive to the situation emerges). If people find it unrealistic to hope for a better near protective action or escape, as the case may be, they may resign themselves to searching for a better solution. They may cope with the situation by avoiding the clues that stimulate anxiety and psychological stress. This form of this defensive avoidance pattern is described by Janis and Mann (1977:38) as involving

...a defensive lack of interest in the problems posed by the emergency: the person becomes selectively inattentive to threat cues and avoids thinking about the oncoming danger by distracting himself with other activities, taking alcohol or other drugs, or developing fatalistic beliefs that support a precariously optimistic outlook. This evasive form of defensive avoidance is likely to occur in situations of imminent threat only if no escape route is perceived as offering any better chance of survival than doing nothing at all...[emphasis added]

Hence, in situations of extreme threat, where the perceived chance of survival is roughly equivalent regardless of protective or avoidant behavior, individuals may cope by systematically ignoring the clues of impending danger. Again, however, the level of perceived threat must be high and the perceived efficacy of the alternative actions roughly equivalent or less effective than doing nothing. Under these conditions the continuation of activity underway is probable.

As the clues of impending danger become more and more evident, a larger proportion of the population is likely to recognize the potential hazard. This is particularly so when the impending danger is detected through the use of the five human senses. Summarizing the threat of impending nuclear war, from the 1978 national survey on civil defense, Nehnevajsa (1979b:18) finds that over half of the Americans in the survey would recognize some military, political and economic crises, as well as clues of a strategic nature hence recognizing the crisis expectant period. Furthermore, when direct Soviet involvement is included nearly three out of every four Americans would recognize such a strategic warning. This implies that even in more difficult detection situations the majority of people will begin to recognize the potential for hazard. However, 10 percent "...thought they would reach the conclusion that war was

coming not more than a few hours before the actual attack." Nearly 20 percent believed that there would be no actionable warning time, while 19.6 percent said they would do nothing and 9.9 percent added they would simply pray. In this regard, then, available time for adopting appropriate behavior is of fundamental importance. Hence, the continuation of current activity may well be a function of perceived lack of time with which to effectively adapt behavioral activity to the impending crisis.

11.4 Summary

Activity of whatever variety is constrained by the time in which it occurs, behaviors in the crisis expectant period is constrained, in the sense that activity which is generated to respond to the crisis must replace other activity. Therefore, behavioral response during crisis expectant periods includes continuing, discontinuing and nascent activities. Nascent activities will be reviewed in a following chapter in the form of a complete summary of the behavioral priorities in the crisis expectant period. However, several fundamental issues have been shown to be of primary importance in the determination of the continuation and discontinuation of activities in the crisis expectant period. First in this regard is the perceived degree of hazard; that is, the degree to which the potential for hazard is perceived as real, salient, imminent and threatening. Second, it has been shown that in the crisis expectant period in particular the recognition of the hazard clues is of fundamental importance in the continuation, modification or discontinuation of activity. The third issue concerns the amount of investment in the current activity. By this we mean the nature of the current activity in terms of complexity, cost, commitment and the likelihood of loss should the current activity be discontinued. Fourth, we have pointed out that normalcy behaviors are likely to continue to the extent that more appropriate behaviors cannot be identified. This implies that some activities may be adapted to the impending hazard. Finally, it is clear that actionable time is required for the consideration of alternatives and the implementation of any nascent activity. Hence, to the extent that there is no actionable time behavior may continue in maladaptive ways. Hence, the perceived degree of threat, its recognition, the investment in the current activity, the availability of more effective alternative activities, and the time to implement them, to a large extent determine the continuation and discontinuation of behavioral activity in the crisis expectant period. The chapter "Behaviors in Anticipation of Official Warning" will examine the factors associated with nascent activity in the expectant period.

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12. DIVERGENT ACTIVITY IN PERIODS OF AUTHENTICATED THREAT

12.1 Introduction

As in "Behavioral Continuities Under Crisis Expectant Conditions," this chapter focuses on continuing and discontinuing activity as the disruption or potential disruption of social and physical environments becomes more imminent. The life-threatening nature of these disruptions during the crisis surge period usually means maladaptive behavior is potentially deadly. Warning initiates the crisis surge period, and disrupts normal daily activities. Because routine behavior is guided by everyday norms and directed toward familiar ends, they are less likely to coincide with the requirements of emergent norms and emergency needs. To continue normal daily activities at this stage would be maladaptive.

Authoritative official warning confirms the impending hazard during the crisis surge period. Here the Janis and Mann (1977) framework for adaptive and maladaptive decisions under conditions of authenticated warnings is particularly relevant. In juxtaposition to the crisis expectant period, the surge period is likely to be adaptively characterized by increased nascent activity, increased disruption of routine behavior, and decreased continuing behavior. The major exception here is continuing adaptive nascent activity initiated in the crisis expectant period. For example, if preparatory activity begins in the crisis expectant period, its continuation or even augmentation in the crisis surge period provides continuity with the previous phase and is adaptive in nature. Furthermore, the extent that maladaptive behavior of the previous (crisis expectant) period is adjusted to accommodate the new information (primarily the warning and its message regarding actions), this too is adaptive.

12.2 Continuities

Continuing activity under crisis surge conditions reflects the general belief that personal risks are not serious if no protective action is taken. A person's "...initial appraisals...generally take account of the credibility of the communicator..." (Janis and Mann, 1977:37). In answering the question of the seriousness of the risk if no protective action is taken, people tend to assess the reliability of the information source in terms of knowledge and trustworthiness.

If the person takes the message seriously, he examines environmental signs that show whether or not the predicted threat is likely to affect him. If he judges the probability that the threat will materialize to be so small as to be negligible ("It won't happen here!") or if he judges the magnitude of the danger to be low enough to be tolerated ("Nothing bad will happen to me or mine!"), his answer to the first question [concerning the seriousness of the

risk if no protective action is taken] will be no. (Janis and Mann, 1977:37)

In this case the warning of impending danger does not tend to evoke protective action. In Janis and Mann's term--"unconflicted inertia" occupies and takes the form of continuing activity.

In that event, little or no psychological stress will be evoked by the warning. He will complacently decide to continue doing whatever he has been doing, ignoring the warning and the accompanying recommendations to take protective action. (Janis and Mann, 1977:37)

This does not deny that people will ignore warnings because they are hiding from reality, although this might be important, but rather that people are sophisticated information processors capable of analyzing information for themselves. Ignored warnings may stem from what Thomas et al. (1980:26) characterize as ostriches, that is,

...people who try to suppress awareness of the possibility of disaster and are therefore most subject to stress when it occurs. They will resist public information in peacetime or crisis and can best be reached by concerned friends or relatives.

Hence, one source of continuity of routinized behavior are people that suppress information and the stress that would otherwise be associated with it. Conversely, if people are perceived as sophisticated information processors (cf. Janis and Mann, 1977; Simon, 1967) the seemingly ignored warning is perhaps better characterized in terms of conflicting messages induced by the official warning and the lack of confirmation of the likelihood of danger and its possible severity.

Research shows that people seek confirmation of warnings received over the mass media more often than they do for warnings received from a more personal process, such as from a neighbor or an official. (Frazier, 1979:343)

This is consistent with the idea that the credibility of the warning source is of primary relevance in determining human response to warnings of potential danger.

It has been widely shown that confirmation behavior in conjunction with warnings is a common reaction (cf. Landry and Rogers, 1982). Frazier (1979:342-343) concludes:

...people seek independent confirmation of a disaster warning. They try to gain additional information beyond that contained in

the original warning. The warning is more likely to be believed if there is some visible evidence of the danger. A tornado warning heard on the radio is likely to send the listener to his or her window or yard to check the sky. A flood warning often sends people to the river banks to see for themselves.

This can work against the individual and be maladaptive. Particularly when the clues of impending hazard are not readily apparent. In flash floods, for example, the rains that cause the flash flood may have occurred so far away (up-stream) that the individual is unable to detect the oncoming danger first-hand. Similarly, another case of interest is the threat of an impending earthquake. Man, as this sophisticated information processor, can be misled due to the lack of first-hand observable evidence of danger, even though the official authenticated warning has been issued.

If the warning message is less than clear, conflicting, or otherwise not authenticated, the continuation of current routine activity is probable. Flynn and Chalmers (1980:21) in their work on the public's reaction to the Three Mile Island found that,

In a few households, the absence of a clear order for everyone to evacuate resulted in disagreement over whether to evacuate. About 12 percent of the respondents in the NRC survey said that members of their families disagreed somewhat or strongly over the decision. Most of these families did not, in fact, evacuate: given the general level of tension in the area, the family members who favored evacuation were undoubtedly upset.

Furthermore, people sensitive to the added tension, by being more concerned, were also likely to take protective action. Since the Governor's advisory specifically mentioned pregnant women, and preschool children, they would be expected to take protective action more vigorously than those not specifically mentioned. The surveys in the wake of the accident at Three Mile Island tend to confirm that some people are more likely to take protective action than others. By examining these individuals that took no protective action, some clues as to the nature of the kinds of people most likely to continue routine daily activity are obtained.

The NRC survey (Flynn, 1979) showed that females were more likely than males to evacuate. Two-thirds of the children age five and under were evacuated, and it appears that 90 percent of the pregnant women evacuated. In the NRC study, no systematic relationship was found between income, education, and occupation and evacuation behavior. However, according to the Kraybill (1979) study the more highly educated were more likely to have evacuated. Both of the surveys and the personal interviews indicated that older persons were less likely to have evacuated. In part, this was because they were less likely to be included, directly

or indirectly, in the governor's advisory. (Flynn and Chalmers, 1980:24).

Males were more likely to continue routine daily activity than females; older people more likely to continue than younger individuals. Note that nearly one-third of the youngsters age five and under were not evacuated, while 10 percent of the pregnant women failed to evacuate. This indicates that people were processing their own information and were not simply responding to the warning devoid of consideration and feeling.

The nature of the warning message and its perceived validity in terms of the credibility of the source, the authority of its sender and the confirmation of its meaning plays an important role in the response to the warning message. Even so, some people may deem themselves unable to respond and therefore continue present activity. Flynn and Chalmers (1980:20-21) in reporting on the NRC study of the Three Mile Island residents following the accident show that,

...households in which some people evacuated and some did not were very sensitive to the danger of the situation (86 percent reported that the situation seemed dangerous). The primary reasons given for some persons remaining behind were that they were unable to leave their jobs or that they would have left only had they received an evacuation order. Many (45 percent) felt that whatever happened was in God's hands, and a third were concerned about looters.

In this case then, the danger was perceived to be real by the majority, but the nature of the warning message was direct enough to elicit protective action. The Governor's advisory was not intended to evoke a general evacuation.

In the households where no one evacuated, another consistent pattern was evidenced.

The overriding reason given for staying was that they were waiting for an evacuation order; this reason was followed by the feeling that whatever happened was in God's hands. The third reason for staying was that they saw no danger; this was mentioned two and a half times as frequently by households in which no one evacuated, as compared to households where some members evacuated and other did not. Together, these three reasons suggest greater confidence in authority in the households where every one stayed. Although the desire to remain for their jobs was something of a consideration for this group, it was not the overriding concern that it was for the nonevacuees in households in which some persons evacuated. (Flynn and Chalmers, 1980:20-21)

There are several factors related to the continuation of routine activities in the crisis surge period. First, there is recognition of hazard--failure to recognize the impending danger as serious tends to result in continued normalcy behavior. Second, a sense of helplessness as expressed above in terms of being in God's hands. And third, vague or inaccurate warning messages.

In the case of Three Mile Island the warning message was deliberately left vague, as an advisory, but Kueneman (1973:13-14) discusses another case where continuing routine behavior led to "last minute" protective action on the part of exposed persons.

Warning was inadequate for a number of reasons. First of all, the rain came twice as fast as the weather bureau had predicted. Secondly, while water was already in its normal spring freshet and had caused some flooding in the Mougerville-Sneffeld area, there was no cause for alarm since this was an annual occurrence. As often happens, when the people who lived in this area were warned of extensive flooding, they refused to evacuate themselves and did not move their animals to higher ground. Relying on previous experience, they did not think they would be in any greater difficulty than they normally were. Thirdly, since the power company was not able to predict river flood stages, their estimated time of flood impact was very inaccurate and the flooding reached Fredericton several days before expected. Thus while people were warned that a major flooding would occur the above problems tended to counteract its effect.

Here it is clear that the nature of the message, in terms of its authority and directive for action, is vital in determining which activities to continue. The accuracy of the time, the magnitude of onslaught and the perceived validity of the information contained in the warning message placed in the context of prior experience are pertinent.

This is the sense in which warning messages must overcome the tendency to respond to warnings (particularly repeated ones) casually, or as if the crisis couldn't happen here. Farace, Villard and Rogers (1972:12-13) illustrate the point:

Another situation which helps support the idea that "those things don't really happen to us," especially in the case of tornadoes, is the very frequent occurrence of tornado "warnings" and "watches." From our interviews, it appears that a large proportion of the public disregard such warnings as commonplace, everyday occurrences. (p. 12)

They go on to conclude that:

One of the results of frequent alerts and no tornado is to reinforce the notion that "those things don't really happen to us," with the end result a 'decreased' willingness to develop disaster plans and to take precautionary measures. (p. 13)

If the warning message can personalize the threat for the individual, adaptive response is more likely. Koster (1978:27-28) maintains:

We have seen that small town officials react to threats when it was a matter of personal concern, and that seat belt owners tend to buckle up more if they had had friends injured in accidents. This personalization of the threat--the reverse of "it can't happen to me," seems to hold true in other kinds of warning implementations as well.

No more than two-thirds of the residents of Lower Cameron Parish evacuated before Hurricane Audrey struck in 1957. The next year 75 percent evacuated in the path of tropical storm Ella, even though Weather Bureau advisories did not at that time advise evacuation. When Hurricane Carla occurred in 1961, 96.6 percent of the persons interviewed had evacuated the area.

It is through prior experience that the hurricane threat was personalized for the residents of Lower Cameron Parish. Personalization can also occur by stressing the similar and the contrary nature of the current danger in reference to prior experiences and experiences in other locations.

In these cases the transition from everyday norms to crisis emergent norms, appropriate to the crisis surge period, does not happen. In the transition to emergency norms, however, individuals are likely to experience some inappropriate emergency behavior as a result of continuity with routine activity. In one reported instance, in connection with the Three Mile Island accident and the public's reaction to it, "...one informant baked, decorated, and delivered a promised cake for a birthday party for Saturday on her way out of town' (Flynn and Chalmers, 1980:21). This exhibits an instance where individuals were guided by seemingly inappropriate adherence to routine norms which might have resulted in less adaptive behavior. In such cases we must recognize that the individual's completion of this responsibility may have served to make their behavior more adaptive. It provided a focus of attention during the evolving emergency, thus preventing the individual from becoming anxious about the impending danger. Even though continued activity is likely to result in maladaptive response to the emergency in the crisis expectant period--maladaptive in the sense of being less adaptive than would otherwise be expected--it may result in less maladaptive behavior than might otherwise result. By reducing tension and anxiety and continuing normal activity overall adaptiveness may increase.

12.3 Discontinuities

In the crisis surge period continuity suggests a maladaptive response to an authenticated warning. Likewise discontinuity tends to reflect a disruption of routine activities that are usually indirectly adaptive. These discontinuous activities may, for example, be a searching for appropriate protective behavior, or reflect preliminary activity for eventual directly protective action, however, they seldom deal directly with the impending crisis. One set of discontinuous activities that are adaptive in the sense of accomplishing preliminary protective objectives are characterized by the location of family and household members for eventual action. Hill and Hansen (1962:217) speculate that,

Because the urban middle-class family is typically involved in business, school, and other organizations, there is a good possibility that family members will be widely scattered at the time of warning and impact. In nuclear attack, grave problems of transportation and communication may arise as survivors seek to discover the fate of their loved ones. The potential for community disruption is obvious.

This suggests a tendency to take protective action with other family members. These significant others are often located in conjunction with the confirmation process. That is, while people are contacting others to confirm the potential for danger, they also confirm their own protective action unit's (usually a family or household unit) behavior.

This "gathering together of the loved ones" also has significant effects for other social institutions. For example, Flynn and Chalmers (1980:38-39) report the following in connection with the public's reaction to the Three Mile Island accident.

When the governor advised people to stay indoors in his press meeting at 10:30 Friday morning, each school in the Middletown district was notified by telephone to shut down ventilating systems, to shut windows, and to allow only indoor recess. Crossing guards, bus drivers, and cafeteria staff were also notified to stand by. Absentee lists were checked to ascertain which children were at school that day. When people began arriving to pick up children, they were asked in many cases to sign for them, especially if they were not the children's own parents. Thus, an ad hoc procedure was developed to account for every child. The amount of hysteria at each elementary school seems to have been a function of its size. In the smaller schools, principals were able to patrol the halls and reassure parents who were very upset before they entered the classrooms. In larger schools where this was not possible, children became much more frightened by other children removed by their parents from school and by teachers in tears.

In effect, had the schools not operationalized emergency procedures to send children home, which was accomplished by 1:30 p.m., they would have been forced to accommodate the removal of children from schools by concerned parents seeking to unite the family unit for possible protective action. People tend to "gather the flock" during the crisis surge period making compliance with directed protective action more likely. This effect is similar to Perry, Lindell, and Greene's (1980:49-53) finding that,

Compliance with a request to relocate is more likely if family (household) members are together or otherwise accounted for during relocation.

Such gathering and locating behaviors implicitly indicate that routine activity is disrupted and supplanted by these preliminaries to protective action.

Resources generally available to the social institutions responsible for socialization have been shown by Wenger (1972:32) to be diverted to emergency use. Many of the "Public education programs are cancelled, and the resources of these agencies may be diverted..." to more emergency relevant objectives.

The socialization function of the mass media, however, is increased, while their entertainment function decreases proportionately. It may be seriously curtailed as the mass media become the primary source of knowledge about the disaster both before and after impact, and of the appropriate attitudes and behavior for community members during the emergency period. (p. 32)

This is indicative of the idea that the media's role is to inform the public about the impending danger--its timing, magnitude and possible protective actions. The educational institutions are directed at a more general socialization that takes on a lower priority during the crisis surge period. Hence, the disruption of the more routine socialization associated with the schools in favor of the emergency instruction of the media during the crisis surge period is an adaptive response to the impending danger.

The potential for disruption of personal lives as the result of institutionalized protective measures is demonstrated by the public's response to the Three Mile Island accident and its aftermath. These incidents can sometimes be dramatic as in the following case of vigilant behavior reported by one resident.

On Friday a very frightening thing occurred in our area. A state policeman went door-to-door telling residents to stay indoors, close all windows, and turn all air conditioners off. I was alone, as

were many other homemakers, and my thoughts were focused on how long I would remain a prisoner in my own home and whether my husband would be able to come after teaching school that day.

Suddenly, I was scared, real scared. I decided to get out of there while I could. I ran to the car not knowing if I could breathe the air or not, and I threw the suitcases in the trunk and was on my way within one hour. If anything dreadful happened, I thought that I'd at least be with my girls. Although it was very hot in the car, I didn't trust myself to turn the air conditioner on. It felt good as my tense muscles relaxed the further I drove. (Smith, Trinity Parish Newsletter, 1979).

Frequently, however, the disruptions of personal lives in the crisis surge period are more mundane and realistic.

During the two-week emergency period, the activities of at least half of the people in the area were disrupted (Flynn, 1979). During the week following 30 March, curfews were in effect over much of the area, and evening meetings were cancelled. Schools were closed, many of the children had evacuated, and, therefore, daytime activities involving children as well. The main changes in day-to-day activities mentioned by NRC respondents were staying indoors, cancelling plans, being on edge, and getting ready to leave. Other frequently mentioned responses were that someone was out of work, children were home from school, extra time was spent listening to the news, or they worked more than usual. (Flynn and Chalmers, 1980:25)

While staying indoors was called for by the Governor, cancelling plans, being particularly attentive to the news, cancellation of evening meetings, spending extra time at work and the like seem to typify the discontinuities of activity in the surge period.

12.4 Policy Implications

In general terms, continuing activities in the crisis surge period tend to be maladaptive, while discontinuous activities reflect an adaptation to the impending hazard, although indirectly. Routine activity associated with normal times are likely to continue when any one of three conditions are met. First, the warning message is unclear or contradictory as to the nature, magnitude and even timing of the impending danger. Second, the people of the area involved, through associated experience and confirmation of the warning signal, fail to believe the warning message or believe it applies only to others. Or third, when the warning message is delivered by sources deemed non-credible. Warnings should be credible and authoritative, so as to be perceived real; repeated, so as to be self

confirming if possible; clear, concise and instructive, so they result in appropriate adaptive action; and finally, they should not only tell people what to do but how this hazard is similar to or different from those of previous times. This sets the stage for the actions required in this particular occurrence. In addition, to enhance the chances of confirmation by the most credible source, one's relatives, friends and neighbors. (cf. Perry, Lindell and Greene, 1980) two-way communication should be encouraged wherever possible.

Discontinuous activity should be encouraged, particularly in cases where substantial forewarning is available. This is the way that discontinuous activity best prepares the people for eventual adaptive behavior. It sets the preconditions if you will, for swift, planned (even if only in relatively short periods) and directly adaptive behavior. Hence, effective, authoritative, verifiable, and early warning seems to take advantage of likely activity and sets the stage for an effective public response in the crisis surge period.

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13. BEHAVIOR IN ANTICIPATION OF OFFICIAL WARNING

13.1 Introduction

This chapter will examine human behavior in the crisis expectant period. The focus here will be on nascent activity, rather than the continuation and discontinuation of ongoing activity; that is, behavior that emerges because of the impending hazard. As with continuing and discontinuing activity, nascent activity may be either adaptive or maladaptive, while in contrast the adaptiveness of the activity is primarily a function of its aim, rather than coincidental as with continuing and discontinuing activity. Nascent activity aims at dealing with the impending crisis.

13.2 Emergency Decisions and Behavior

While continuing and discontinuing activities do not require a conscious decision to act in a particular way, nascent activity implies that a decision has been made. Janis and Mann (1977:35) begin by conceptualizing maladaptive responses to disaster and potential disaster situations "...as the product of emergency decision making that is defective in one way or another." Conversely adaptive behavior is the product of effective disaster decision making. Janis and Mann (1977:35) posit theoretically that:

Effective emergency decisions are most likely to be made...when a vigilant coping pattern is dominant, which requires that the following four mediating conditions are met: 1) awareness of serious risks if no protective action is taken; 2) awareness of serious risks if any of the salient protective actions is taken; 3) moderate or high degree of hope that a search for information and advice will lead to a better (i.e., less risky) solution; and 4) belief that there is sufficient time to search and deliberate before any serious threat will materialize. When one or another of these conditions is not met, a defective coping pattern, such as defensive avoidance or hypervigilance, will be dominant, which generally leads to maladaptive actions.

Janis and Mann's resultant theoretical model addresses adaptive and maladaptive actions as the likely consequences of effective and defective decision making. This theoretical model, like that of Simon (1967:39), treats humans as essentially "...serial information processor[s] endowed with multiple needs... [people tend to]...behave adaptively and survive...in an environment that presents unpredictable threats and opportunities." From this theoretical perspective, more information is better than less, and challenged decisions are better than those unconflicted or those lacking confrontation with potential alternatives.

Because Janis and Mann are concerned with situations where the actualization of impending disaster is fairly certain, or a case of "authenticated warnings" of disaster, they need not be concerned with the determination of the nature and probability of occurrence. This suggests that their model of decision making processes in disaster situations applies to situations where the threat is deemed real or perceived authentic. Expanding upon the Janis and Mann model to account for 1) the perceived likelihood of hazard occurrence, 2) the perceived severity of its effects upon occurrence for the individual, family, community or society, and 3) the potential change or reassessment of estimated likelihood and severity as the emergency situation emerges, produces a more comprehensive framework for examining behavioral activity in the crisis expectant period. The expanded model is compatible with Withey (1962) who points out that when confronted with potential disasters people appraise (and we add continue to appraise) the estimates of:

1. the probability or likelihood that the dangerous event will be actualized,
2. the severity of magnitude of personal, family, community or societal losses if it does materialize, and
3. the potential advantages and disadvantages of the alternative courses of protective action available. (cf. Janis and Mann, 1977)

Finally for the purposes of examining behavior during the crisis expectant period of potential disasters, we must recognize that maladaptive and adaptive behavior result from defective and effective decision making patterns. While effective decision making requires a vigilant coping pattern, which implies both maximum information and a confronted decision, adaptive behavior may stem from non-vigilant patterns of coping. Non-vigilant patterns of coping make adaptive behavioral activity less likely, to be sure, but not impossible. Maladaptive behavioral activity, on the other hand, can precipitate from a vigilant pattern of coping. This possibility in part rests with the potential change of the nature of the disaster agent. This is particularly true if such changes escape detection or are not recognized. This seems to be compatible with the continued reassessment of the likelihood and severity of the potential hazard throughout the period. Vigilant coping patterns are less likely to generate maladaptive behavior than adaptive responses but we must recognize the possibility. Both of these patterns are possible but are more incidental, coincidental or accidental, than deliberate. To some degree then the actual adaptiveness of behavior in the crisis expectant period is dependent on the eventual outcome of the crisis itself which cannot be completely known until it is actualized.

13.3 On Adaptive and Maladaptive Behavior

While the actual adaptiveness of behavior is inherently dependent on the disaster itself; how adaptive a particular behavior is depends also on its intent. This does not suggest that well intentioned activities can be maladaptive, but that adaptive behavior is a subjective concept grounded in the more objective crisis trajectory. In the course of the Three Mile Island incident, for example, about 40 percent of the residents in the area spontaneously evacuated (cf. Brunn, Johnson and Zeigler, 1979; and Flynn and Chalmers, 1980). Does this mean that spontaneous evacuation was maladaptive because the hazard did not catastrophically materialize? If such behavior is maladaptive, then any action by potential victims becomes maladaptive if it occurs prior to a request by presumably better informed emergency officials of one kind or another. An evacuation enhanced the preparedness situation. If, on the other hand, residents near other nuclear power plants would have evacuated, this would have been maladaptive, unless some reason to link the plants and the potentiality for danger during that particular period had arisen. The fact that some of the spontaneous evacuees travelled to areas closer to the plant may reflect a maladaptive behavioral response to the impending crisis. Conversely, evacuation to a point some distance away only to later discover that, due to the changing nature of the situation, further evacuation is required would be considered adaptive (adaptive in the same sense that residents of the threatened area might evacuate to areas that later become threatened, even from other sources). The assessing-acting-assessing cycle is perhaps the most adaptive behavioral response pattern possible, because it reflects a continued monitoring of the situation which can react to either previous behaviors that turn out to be maladaptive, or any changes in the potentially disastrous situation. Adaptive responses to potential crises, then, are subjectively appropriate responses to potentially real, as opposed to imagined crises, that enhance the preparedness situation. In the Three Mile Island example, then, the impending hazard, even though it was not actualized in the worst case sense, was real: a partial core meltdown and uncontrolled breach of containment was testimony to the seriousness of the threat. Furthermore, the spontaneous evacuation, for the most part, left fewer people to be evacuated if the crisis had worsened and thereby enhanced the preparedness posture.

The Three Mile Island incident suggests that people's response to potential crises is anything but passivity. The incident also makes it clear that, even in cases where the threat is being denied (at least by some officials) and certainly where no official warnings were issued, people will evaluate the situation independently and indeed respond in ways that are consistent with their assessment. The adaptive action exhibited in the Three Mile Island incident may be less robust in future similar incidents, because a catastrophic accident did not materialize. For example, it has been observed that:

...people who have had experience with only the fringes of a hurricane are often led to underestimate the full force of such a storm. Similar bases in which a person's experience with a hazard can lead to false perceptions of the actual risk happen with floods. Some longtime residents of the Big Thompson Canyon didn't take the flash flood threat seriously the night of July 31, 1976 because they had experienced previous high-water levels which had not threatened their homes. But the flood that came roaring down the canyon that night brought 240 times the average flow of water and almost 10 times the greatest quantity ever before recorded. Experience was a false guide. Many residents of Rapid City failed to understand the flood threat there the night of June 9, 1972 for the same reason. (Frazier, 1979:340-1)

But in similar situations where there could be no prior experience, reactions are likely to be strong. In the 1978 national survey on issues of civil defense, Nehnevajsa (1979b:18) notes that the majority of Americans surveyed would recognize warning clues of a strategic nature. Although 46.5 percent "...thought they would reach the conclusion that war was really coming not more than a few hours before the actual attack," and nearly 20 percent believed that there would be no actionable warning time, many suggested adaptive responses to the situation. When asked what they would do during this period, even though many of them perceived it to be very short,

16.3 percent mentioned specifically and spontaneously that they would leave their area of residence in this time period. In turn 10.1 percent would evacuate in that they did not specify any particular location they had in mind, and 6.2 percent would relocate in that they had a specific place in mind.

Those who might not move out emphasized seeking a shelter (20.9 percent), adapting their home (6.4 percent) or acquiring various supplies to stock up (18.4 percent). (Nehnevajsa, 1979b:18)

Recognition of such a crisis expectant period also tends to produce some information gathering behavior as "...6.6 percent of the respondents reported that they would actively seek information..." (Nehnevajsa, 1979:35).

Long periods of crisis expectancy certainly do create the potential for a greater amount of protective action, if only by allowing greater time for consideration and action. In one case,

The threat of flooding had been recognized for months prior to its onslaught in this region. As a result some of the residents along the lake-front had purchased sand bags from the community government (at 20 cents per empty bag and 25 cents per full bag). (Kueneman, 1973:1).

In their review of the lack of panic, Quarantelli and Dynes (1976:235) describe some of the relevant activities in which people engaged during crisis expectant periods.

Disaster studies show that people do not flee widely from a disaster area. Solo or collective panic flight, in fact, is so rare as to be an insignificant practical problem. Despite stories of thousands abandoning their communities under some threat, most people remain, letting the tourists and the transients flee. Even in the highly atypical, largest evacuation in American history when more than a half million persons left coastal areas of Texas and Louisiana in the face of Hurricane Carla, and despite 4 days of warning, 55% of the population remained in their own area (Moore *et al.*, 1963). Together with their fellow citizens, most residents stay and make decisions such as where to build levees or when to go to tornado shelters, or they join together with friends, relatives and neighbors in boarding up houses or removing store stocks to upper floors or buildings. And when there is evacuation from some location, such movement tends to be orderly, logical, and adaptive, with predisaster social ties being maintained. Thus, one disaster researcher after another has reported that evacuation is almost always by family units, not solitary individuals (e.g., in one flood situation studied (Drabek and Stephenson, 1970) of the families which were together prior to evacuation, 92% left together). Even when evacuation is very sudden, as one study of a dam break showed 23% of those fleeing assisted community members other than those who were in their own original fleeing groups (Danzig *et al.*, 1958). So, far from individualistic panic flight, although flight might be necessary, there usually is a collective and reasonable response to an immediate threat.

This guide suggests, in the first place, that panic flight is above all rare, and that people for the most part respond adaptively to disaster situations. Second, Quarantelli and Dynes point out that transients, tourists and those unfamiliar with the area flee while residents of the area evacuate in an orderly and logical way. Third and importantly, evacuees leave behind not a vacant ghost area, but a sizable contingent of people that join together in making disaster decisions concerning the best way to protect those remaining, the property of the community, and its residents. Fourth, Quarantelli and Dynes point out that individualistic behavior of the "save yourself" variety is nearly non-existent, and further that the family structure within which many decisions are made under normal times remains the primary unit for disaster decision making and behavior. Finally they also point out that many of these evacuation groups stop to help others reflecting a helping norm that is important in the adjustment of communities to disaster. Simply put, the disaster situations are largely characterized by adaptive behavior directed at protecting oneself by protecting the community and its residents. A reasonable suggestion is

that the extent to which behavior is maladaptive, is primarily caused by people's ignorance of how to effectively cope with the impending hazard. Educational programs or materials could therefore be developed to inform people of the various hazards they are likely to face, and appropriate actions to deal with them should they materialize.

13.4 The Provision of Information

As Nehnevajsa (1978:33) points out "...we should not expect the public to act on emergency problems in absence of an actual threat..." but emergency preparedness could and should be educational, if only in a standby sense.

In turn, knowledge related issues are primarily affected by the relevance of the knowledge and its practical usability, so that the preparedness to acquire, internalize, and use knowledge or information is highly sensitive to [the signs of impending danger as reflected in this case by] the drifts in the international environment as interpreted by the individual and as their interpretations are, in fact, influenced by Government, media and other public discourse. (Nehnevajsa, 1978:15)

The case of automobile safety and the use of seat belts and shoulder harnesses illustrates that people will choose to protect themselves under conditions where they perceive there to be increased threat. It also illustrates some of the conditions that might lead to a more effective information and knowledge dissemination.

A Department of Transportation Survey showed that "...a principal reason for not wearing shoulder harnesses or lap belts was 'I never formed the habit'" (Kunreuther *et al.*, 1978:13). Hence, under these relatively normal conditions, they find that

...it is difficult for an individual to change his existing pattern of behavior and make a conscious decision to use seat belts on a regular basis. (1978:13)

In general terms it is noted that the protective behaviors are more likely when either the exposure or likelihood associated with an event are increased. For example the tendency to use seat belts and shoulder harnesses on longer trips but not necessarily on shorter ones reflects this tendency.

This behavior is consistent with the notion that the individual views the probability of an accident to be highly dependent on the length of time in the car or the speed at which he is travelling (since longer trips generally involve highway driving). Hence, one

makes a decision on protecting oneself by focussing on either the time or speed dimension. (Kunreuther et al., 1978:12-13).

Also apparent here is the dependence of protective behavior on the amount and likelihood of exposure. That is, the individual riding in an automobile will be, by definition, "exposed" should that car become involved in an accident. Hence, the likelihood of an event is perceived to be increased by the length of time in the automobile (e.g., driver fatigue) and the speed at which it is travelling (e.g., an accident is potentially more damaging at higher speeds) but by increasing the travel time in the automobile the likelihood of exposure is also increased. Kunreuther et al. (1978:12-13) also note an "...increased usage of belts on a permanent basis by those asked by others to wear them." This suggests that permanent protective behavior is more likely among those with strong social networks.

As lap and seat belts have been required equipment in new cars since the National Traffic and Motor Vehicle Safety Act of 1966 was passed, appropriate protective behavior in the case of automobile accident is both widely recognized and immediately available. For other hazards, however, appropriate protective measures may be more elusive. Under conditions of increasing likelihood of hazard and exposure to its effects, appropriate protective behavior may be expected. If these measures are not understood as effective, available and appropriate, they are much less likely to be used. The need then, is for a standby educational program or set of materials that will provide consistent, relevant and authoritative information as to what to do when a crisis emerges.

By "consistent"...I mean information flow which does not lead to different, ever contradictory, recommendations simply depending on whom you talk to or whom you reach. (Nehnevajsa, 1978:36)

By "relevant" I mean information that is immediately usable in the sense that it is either independent of the particular resources available, or addressed the spectrum of actions available to people with differential resources.

By "authoritative"...I mean information which comes from a person in a position of responsibility who is expected to have the required knowledge and to represent the institutions of the nation's government. (Nehnevajsa, 1978:36)

Nehnevajsa (1978:36) goes on to describe the consequences of not having such a crisis-activated system.

In the absence of such a crisis-activated information and knowledge dissemination capabilities, most people will rely on rumor as it comes along, and will lean on information and advice

from friends, co-workers, neighbors and relatives who are, themselves, equally uninformed.

Hence, one form that emergency preparedness can take consists of an information system that is directed at the dissemination of information and knowledge concerning the specific threat. Materials should include the interpretation of likely clues of hazardness and summary of appropriate actions to deal with the emergency. Such information should be able to supply more elaborate details of proven effective behavior for the early periods of specific disaster types.

Such crisis activated educational programs and materials are expected to be very well received in the crisis expectant period as people become concerned about what to do. As Thomas et al. (1981:21) put it:

There is general agreement that in a crisis-expectant period, education and training is likely to be well-received. During this period, the public at large is more prepared to "tune in" to the civil defense message, and more likely to follow [in this case] shelter guidance. (cf. Bend et al., 1966)

A study by Sullivan et al. (1979) conducted at the Systems Planning Corporation describes the sequences of public reaction during the crisis expectant period:

- (a) 'stress,' eventually reaching very high levels;
 - (b) 'information-seeking behavior,' geared to personal survival; and
 - (c) 'coping behavior,' to relieve stress.
- (Thomas et al., 1981:21)

A crisis activated educational program, aimed at the dissemination of information in the crisis expectant period, is consistent with information-seeking behavior. Furthermore, such materials might take the form of off-the-shelf references, similar to a first aid manual, so that persons needing such information would have it available when they need it, rather than waiting for such informational "broadcasts" as might become available.

13.5 Anticipated Actions

While it may be true that under extreme threat, such as that of a possible nuclear war, it will be difficult to pin-point exact human reaction it is also true that considerable evidence is available regarding human reaction to threats of various kinds. As one Defense Civil Preparedness Agency report concerning issues of civil defense in the 1980's (1979:56) puts it

No one can predict with full confidence the state of mind or the behavior of the American people during a crisis so severe that, for example, Soviet or U.S. city evacuation might be considered or undertaken, limited nuclear strikes considered, or ultimata regarding full-scale attacks issued, for no crisis of such severity has yet occurred. Nevertheless, experience in lesser crises and a substantial body of research results provide significant insights and some basis for judgments.

While it is understood that the public is relatively passive regarding civil defense during periods of low international tensions, it is also believed that public opinions are much more volatile when aroused by heightened tensions associated with current international events. Certainly people and nations with enhanced preparedness capabilities are likely to respond more effectively than those less prepared. Even the perception of this, regardless of its validity, is likely to relieve anxiety, fear and worry which in itself becomes effective in responding to impending crises. The context of international tension becomes one in which the natural tendencies to "pull together" or "close ranks" may be used as a "rallying cry" to enhance the prospects for survival through specific preparedness behavior.

Responses to the 1978 national survey on civil defense (Nehnevajsa, 1979:A-51,A-53) indicate that in excess of three out of every four respondents indicated that 'something' would lead them to believe that nuclear attack was imminent. Further, we know that while 19.6 percent indicated that they would "do nothing" in the time period bounded by becoming fairly certain that a war is coming and an actual attack, many indicated that they would do something: 20.9 percent mentioned "going to shelter," 18.4 percent indicated that they would "stock supplies," 16.3 percent indicated that they would leave the area (i.e., spontaneously) either by relocating to a specific place (6.2 percent) or by evacuating to an unknown destination (10.1 percent), 9.9 percent indicated that they would simply pray, 6.6 percent indicated that they would seek information mostly from public sources (6.2 percent) and somewhat from friends, neighbors, etc., (0.4 percent), and finally 6.4 percent indicated that they would modify their house in some way. Hence, it is clear that the American people are not, for the most part, simply going to passively accept the threat of nuclear war without preparing in some way. Furthermore, given the time to respond, the actual number of adaptive responses might be considerably larger. This arises because many of these respondents believed that only a limited amount of time would be available in which to make such responses.

We believe that people have a sense about what constitutes threat and at least some of the appropriate actions to be taken in the context of a potential nuclear attack. Perry (1981:69) suggests that, at least for natural hazards, people are quite capable of recognizing potential danger.

In the case of natural hazards, such as tornados, floods, or volcanoes, people have a sense of what constitutes danger--wind, water, mud flows, as, etc. These agents may not exactly be familiar, but neither are they completely outside the citizens realm of experience or imagination. Also, these risks are spatially defined in the sense that they are 'visible' and finite, one can feel the wind or see the water or mud. A citizen, relying upon his senses--sight, touch, hearing, etc.--can reliably detect the presence or absence of such in the environment and, if need be, generate some protective strategy on his own, perhaps by seeking high ground or some special shelter. Hence, these types of risks can be perceived by citizens as identifiable, understandable, and as threats from which it is possible to protect one-self.

Interestingly enough, the visibility of natural hazards, in this sense of recognition through human senses,

...has been cited as one of the reasons that citizens are slower to respond to disaster warnings than authorities deem appropriate. (Perry, 1981:69)

This seems to suggest an answer to the issue raised by Inkle and Kincaid (1954:5) in their early work on evacuation in conjunction with the threat of a possible nuclear attack. One of their foci is the social factors affecting the motivation of people to cooperate. In this context they suggest that people are "...not likely to take drastic action[s] in order to avoid a risk which...has never [been] experienced." In part because it is more difficult to detect an oncoming nuclear attack than the more common natural hazards, and in part because the Government is inherently expected to know about these kinds of 'military' matters and thereby have an established authority, and in part because there have been no fringe experiences with nuclear attack (of the kind mentioned earlier in conjunction with hurricanes, etc.) we suspect that motivation for (drastic) action may be less problematic for the nuclear war case than for the more common natural hazards.

Before coping behavior is instigated, people attempt individual observations of the situation. Thus the environment provides many of the clues as to the potential for impending danger

People look at the skies or the river, for example, and try to form their own judgment of the seriousness of the situation. They also look at the behavior of others to see whether they seem to be taking it seriously. (Anderson, 1964:95)

This is the way that people tend to monitor the situation. The hazard is assessed in terms of its likelihood of occurrence and potential for danger

This is achieved through a continued monitoring of the environment for signs of disaster. By consulting with others in the social network as to the seriousness of the situation (likelihood of occurrence and potential for harm), people that may have missed the original clues of impending danger are alerted to the potentially dangerous situation emerging. The clues of impending danger are seldom accepted at face value, the exception being when the clues are particularly strong or threatening. Even in many of these instances people tend to engage in the confirmation of the signals as they are being interpreted by the observer (cf. Haas, 1974; Mileti and Krane, 1973). People tend to "...ask of a convenient source (including the next-door neighbor), 'Is it true?' 'What have you heard?'" (Haas, 1974:49). Checking one's own assessment against that of others serves both to validate the conclusions of impending danger, and to disseminate one's own observations as to what is happening.

Even when confirmation of danger is obtained, there is no automatic bolting to get away from the supposed threat. Time is usually taken to assess what others, whose opinions are of value, are doing and what the consequences for the family will be if the threat materializes. When those others decide to leave or stay, the family follows suit. It is particularly noticeable that in situations where there is a disaster subculture (i.e., a tradition of response to emergencies partly derived from earlier community disaster experiences), there is a strong tendency to minimize the possible impact of the danger. Not only prior experiences but collective assessment of possible consequences for selves and property through discussion among family members influence if and how a response is made to warnings. In short, even when warnings of danger are accepted, a variety of alternate responses are probable because the actual response is derived from the social context. (Quarantelli and Dynes, 1976:234)

The exact nature of what will be done in the crisis expectant period is influenced by the opinions and actions of significant others in the social network. These collective assessments of the emerging situation and appropriate actions to deal with it are often evaluated by family or household units. Often eventual actions are taken with the entire family unit or certainly with consideration of the family unit. For example, in the case of the Three Mile Island incident and the public response to it, there were cases in which "women and children were evacuated so that their safety would be insured and so that those men with official responsibilities would not have to be concerned about them if a general evacuation were ordered" (Flynn and Chalmers, 1980:20). It is in this sense that the social context and in most cases the familial context, influences the nature of the emergency response in the crisis expectant period.

The available disaster research clearly states that the simplest way to avoid being exposed to hazard is to be someplace else when it occurs.

Haas and Trainer (1973:2750) found in a small (N=30) survey of Alaskan residents that:

After first suspecting or learning of the possibility of a tsunami, only 23% left promptly, while 26% continued routine activity. Others sought additional information, waited for or attempted to contact family members, or began preparing for the possibility of evacuation. These were the first actions taken.

In the case of Three Mile Island the spontaneous evacuation of individuals and their families were considerably more pronounced. Flynn and Chalmers (1980:22) put it this way:

Considering the limited nature of the governor's advisory, the extent of the evacuation was substantial. The advisory was just that; it was not an order to evacuate. Further, it only applied to pregnant women and preschool children within 5 miles of the station. Less than 6 percent of the NRC sample had family members who fell under these criteria specified by the governor. However, the surveys by the NRC and by the Pennsylvania Department of Health both indicate that 60 percent of those within 5 miles of TMI evacuated; those amounted to approximately 21,000 persons. In the 5-10 mile ring, 56,000 (44 percent) evacuated. In the 10-15 mile ring, which contains most of the Harrisburg SMSA, 67,000 persons (32 percent) evacuated. Thus within 15 miles of TMI, it appears that a total of 144,000 persons, or about 39 percent of the total population living within 15 miles of the station, evacuated.

Another survey of the Three Mile Island area following the incident indicated that 31 percent of the overall sample said that part of their family had evacuated because of the accident (Brunn, Johnson and Zeigler, 1979:34). They continue, and indicate that:

Within 6 miles of the reactor, more than half (55%) of all respondents evacuated, whereas fewer than one out of 10 (9%) evacuated from the sample communities beyond 15 miles. The distance-delay function, however, does not reveal a proportionately uniform decline in evacuation with distance but rather a sharp discontinuity at a distance approximately 12 miles from the plant. The 12 mile circle divides the entire sample almost exactly in half. Within the circumference, 53% of the sample evacuated while beyond that distance only 9% of the sample evacuated.

Brunn, Johnson and Zeigler (1979) go on to explain the 12 mile partition as the consequence of the Governor's advisory message and the advisory messages concerning the protective measures associated with

staying indoors with the doors and windows closed and air conditioners. In yet another survey of the residents of the TMI area conducted by a team of researchers at Rutgers University, "Approximately 39% (N=140) of respondents...evacuated themselves and/or their families from the area during the crisis" (Cutter and Barnes, 1982:5). Furthermore, Flynn and Chalmers (1980:20) note that people "...who remained behind usually made preparations for leaving such as filling the gas tank and packing, but they did not evacuate." These reported actions clearly show that people are likely to employ avoidance behavior in the form of evacuation, or preparatory evacuation, under circumstances where the threat of danger is perceived to be real, even if no official warning is issued.

In a re-analysis of the 1978 national survey on civil defense (Nehnevajsa, 1979) Rogers notes that:

Since 32.3 percent of the entire sample are likely to take adaptive action in the event of a period of increased tension, and only 22.7 percent are expected to take maladaptive action under the same circumstances, we conclude that action is more likely to result in adaptive behavior than maladaptive behavior (1980:5).

Furthermore, because over 60 percent of those people likely to make maladaptive responses during this crisis expectant period would be exchanging relatively high risk areas for other relatively high risk areas, Rogers (1980:5) suggests "...that the primary reason for this grossly apparent size is misinformation..." This highlights the need for dissemination of information concerning appropriate behavior in the crisis expectant period. Furthermore, this highlights the need for stockpiling information of the off-the-shelf variety so that spontaneous behavior in crisis expectant period can be most effectively used in the overall emergency preparedness posture. Hass and Trainer (1973:2751) indicate that even among those that evacuated to relatively safe areas most adapted in appropriate ways though others engaged in maladaptive activity.

Of those that evacuated, 61% went directly and stayed away until the cancellation message came. However, most of the rest engaged in some type of "unsafe" action such as leaving from some place other than home but stopping by the house on the way to evacuation, leaving a safe place to check on relatives, or leaving a safe place to get something from home and then returning to an evacuation place.

In the case of the spontaneous evacuation from potential target areas, Rogers (1980:6) notes that 44.4 percent of the "...sample are not likely to take any action spontaneously [hence leaving any] insights as to adaptiveness of that inaction...[to be]...examined in the light of response to directed evacuation..." requests. This tends to suggest that many people simply have not recognized the potential hazard as materializing at

particular time. Hence, they are waiting to see how serious a matter the situation turns out to be. In the case of the tsunami, 26 percent continued in their normal routine, indicating that the threat was not yet perceived as real. Hence, these findings tend to support the notion that many people in the crisis expectant period may fail to recognize the clues of impending hazard, but of those that do evaluate the situation as hazardous, many will act and in adaptive ways.

13.6 Implications for Preparedness

Nehnevajsa (1978:34) outlines the preparedness objectives for the crisis expectant period, when he posits that

Whether the measures taken in a crisis environment are appropriate and promise some degree of effectiveness clearly depends on the pre-crisis or normalcy 'plans' the nature of which can be communicated to the public in a simple, consistent and authoritative manner when the need is there.

The suggestion here is to rely primarily upon off-the-shelf emergency reference materials in the crisis expectant period; that is, give the public information about the nature of hazards of various kinds so that the available clues of impending crisis may be recognized and appropriately interpreted. This facilitates the enhancement of the preparedness posture by extending the actionable time to adjust to the impending hazard. Second, these readily available educational materials can provide simple, consistent and relevant information as to the nature of adaptive action in the crisis expectant period.

While panic-flight is considered rare (cf. Quarantelli, 1954), Koster (1978:34) points out that "A key ingredient to avoiding panic is preparedness...concerning appropriate responses in fear-provoking situations." This kind of off-the-shelf reference material may serve to relieve stress which stems from misinterpreting the nature of the clues of potential hazard, and by providing readily identifiable and recognized effective alternative courses of action. This kind of off-the-shelf reference material can provide information that makes it more difficult for the "...main factors...characteristic...of the panic-producing situation..." to come into existence (Koster, 1978:34). Readily available information would 1) identify the possible escape routes in advance and thereby reduce the potential for any misunderstandings or surprises concerning the potential for entrapment or partial entrapment; 2) provide information concerning the nature of hazards and thereby reduce the potential for overestimating the likelihood or imminence of the impending hazard which would lead to a greater understanding of the perceived threat and make inappropriately perceived high threat less likely; 3) provide information as to appropriate and adaptive activities which would make individuals less dependent on the behavior of

others as an indicator of adaptive behavior, which would reduce the potential for a breakdown of communications of the front-to-rear variety (cf. Koster, 1978; Quarantelli, 1954; Turner and Killian, 1972).

Information of this kind can help to avoid panic, which would be rare anyway but always seems to persist in the public discourse concerning these matters. Such information would also provide needed guidance to the public by supplying information concerning three critically important factors effecting individual emergency decision-making:

1. the definition of the threat as real (that is, the development of a belief in the warning),
2. the level of perceived personal risk (beliefs about personal consequences of disaster impact), and
3. the presence of an adaptive plan (being acquainted with a means of protection). (Perry, Lindell and Greene, 1980:40)

Readily available information would thereby guide public response in the crisis expectant period but would also take advantage of the tremendous propensity to seek out relevant information and act upon it in such cases during the crisis expectant phase of crisis.

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14. BEHAVIORAL RESPONSE TO OFFICIAL WARNING

14.1 Introduction

As in "Behaviors in Anticipation of Official Warning" this chapter is concerned with nascent activities in response to an impending hazard. However, unlike the previous chapter, the focus here is upon nascent activities in the crisis surge period. Similar to "Divergent Activity in Periods of Authenticated Threat," this chapter may also be examined in the Janis and Mann (1977) framework for emergency decision making. The nascent activities discussed here are most likely to be adaptive and appropriate for the specific crisis at hand. Furthermore, they are by definition aimed directly toward appropriate protective or avoidance behavior as understood by the recipient. Before elaborating on the kinds of nascent activities engaged in during the crisis surge period, some precursors to nascent activity need to be discussed--principally the receipt of warning. How the warning message is received, from whom it is received, and its meaning determine to a large extent the nascent activities in which people engage.

14.2 Receipt of Warning

Perhaps the most important issue during the crisis surge period is the interpretation of the warning which initiates it. Specifically, it is of fundamental consequence how the warning message is assigned its meaning. That is, in Janis and Mann's (1977:37) terms "Are the risks serious if I don't take protective action?" Given that the risks are found serious enough to warrant action, nascent activity of one type or another is likely to follow. But what are the characteristics of a warning that make it most likely to yield this response? The warning must be received as if it were real in order for the warning to result in action. Perry, Lindell and Greene (1980:42-48) conclude that:

Authorities can communicate information regarding the reality of nuclear threats with the warning message.

Receipt of the request to relocate from a credible and authoritative source increases the likelihood that the threat will be perceived as real.

And this in turn increases the likelihood of an adaptive response in the crisis surge period. In addition authorities can enhance the perception of the threat as real by including in the warning message "...specific but limited information regarding personal risk..." (Perry, Lindell and Greene, 1980:44-47).

Officials must exercise caution, however, so that inappropriate information is not included in the warning message. Glass *et al.* (1980:737) report that in cases of tornado warnings some people have been misled:

The results of this investigation indicate that if the people who were in their cars when the tornado struck had stayed home or had abandoned their cars for more secure shelter, their risk of sustaining injury would have been greatly reduced. People may have taken to their cars in part because of the recommendation urging people in cars 'on the open road' to drive at a right angle to the path of an oncoming tornado. They were unfamiliar with the newer and less publicized NOAA recommendation urging drivers in urban areas to seek shelter indoors. Once in their cars, the drivers were unable either to determine the direction and speed of the tornado or to avoid traffic congestion at major intersections in the city. Since 96 percent of people claimed they had adequate warning, the problem was one of proper education and response.

Simultaneously, authorities cannot become too cautious, so that people receiving the warning message remain unsure, or tentative with regard to the appropriate action. An even worse possibility is that people will remain unsure with respect to the imminence of the threat, its likelihood or expected severity.

Among certain classes of warning sources, for example, media sources, there seems to be little difference in terms of induced protective action. Baker (1979:12) finds in conjunction with Gulf Coast hurricanes that:

Most coastal residents receive the majority of their information about threatening hurricanes from the media--primarily television, followed by radio. Source of information has little or no association with evacuation, however. How people first hear about a storm, how they receive their monitoring information about it, and how they first hear that it is expected to strike their area appear to make no difference. Radio broadcasts were found to be slightly more strongly related to high evacuation rates than television in one study, but the results did not replicate in a second investigation.

In another study of hurricane warning, Paredes (1978:48) recognizes that:

Even though most of the respondents relied upon mass media for information about the oncoming hurricane, nearly a third learned through interpersonal networks that the storm was actually going to hit the area

Furthermore Perry, Lindell and Greene (1980:51-53) indicate that more credible warnings are likely to generate nascent response and:

The closer one's relationship to extended kinsmen, the greater is the number of potential credible sources of warning information.

Thus, the greater the number of credible sources, the increased likelihood of an appropriate protective action. Baker (1979) discovers various sources of mass media warning make little difference, while Perry, Lindell and Greene (1980) argue that social network sources of warning are more effective in generating protective action.

In addition, it should be pointed out that seldom does a singular warning produce immediate response. For this reason several warning sources result in more effective public response to warning. Brouillette (1966:37) illustrates the essence of good warning with the following example:

Sometimes warnings disseminated by several different means might serve as authenticators for the recipients. Note, for example, the number and nature of the cues available to the people of Leedy, Oklahoma, in 1947 prior to a tornado.

...almost half an hour before the tornado struck, the funnel was sighted in the distance by a local telephone official. He immediately sounded the fire alarm, which brought all the volunteer firemen to a central point. Also, it was announced over a high-powered public address system that a tornado was approaching and people were advised to go to storm cellars. In addition, volunteer firemen and other able-bodied men canvassed the town, spreading the warning and assisting old people and invalids to places of safety. As a result, almost the total population was in storm cellars when the tornado struck...leaving...two-thirds of the town...completely devastated (cf. Logan *et al.*, 1952).

The major feature of this situation is a forewarning with adequate time, which allows for the community to make the necessary last minute preparations. The warning consisted both of formal announcements via loud speakers and public address systems, and a more informal community involvement that permits a personal communication of impending danger. For these citizens, several sources confirmed the need for action and created an atmosphere that in turn protected most of the community, even though the effects of the storm were quite devastating.

This is not to say that single warnings cannot be equally effective. However, evidence indicates that single warnings are most effective in cases where strong disaster subcultures exist. Brouillette (1966:37-38) documents such a case:

There appears to be one major exception to the rule that "people will generally not take precautionary measures on the basis of a single clue..." One might hypothesize that if a

community has been routinely impacted by a particular disaster agent, a single clue may be sufficient to initiate public response. This seems to be the case in disaster subcultures. Examples of disaster subcultures in the United States would include parts of Oklahoma and Kansas in "Tornado Alley," and in other areas such as Cincinnati which experience periodic inundation of flooding. In these and other disaster subcultures, public and organizational response may be initiated on the basis of a single clue, such as a WB [Weather Bureau] bulletin re-issued over radio and TV.

Warnings for non-occurring threats can prove to be counter-productive. Janis and Mann (1979:59-60) argue that:

Evidence from disaster research indicates that when people are warned about oncoming danger that will materialize within a very short time interval, their fear mounts to such a high level and they act so inappropriately that they would be better off with no warning at all. Fritz and Marks (1954) present data from a study of community reaction to a tornado showing an association between last-minute warnings and maladaptive behavior. The data indicate that the incidence of death and severe injury was extraordinarily high in those families who were forewarned less than one minute before the tornado hit the town, as compared with families with longer forewarning time and those with no forewarning at all. Although recognizing that a number of extraneous factors might influence these correlational results, the authors tentatively conclude that "people who had only brief forewarning took action with a protective 'intent', but...the actions taken may have actually increased their danger or they may have been caught unprotected during the process of taking [inappropriate] protective action" (Fritz and Marks, 1954:38). The people who receive a forewarning less than one minute before the danger impact presumably became so hypervigilant that they exercised poor judgement and acted in an inefficient manner, which increased their chances of becoming casualties. (Fritz and Marks quoted and embellished upon by Janis and Mann.)

Particularly long forewarning periods can be taken advantage of, especially when they are in the context of prior experience or in the area likely to be impacted. Wenger (1972:41-42) reports the following situation that developed in response to flooding on the upper Mississippi and Minnesota river basins.

With the initial warnings, they began massive flood preparations. Large scale diking operations were begun...Local organizations contacted outside agencies and institutionalized plans for securing needed equipment for the forthcoming "flood fight." News of the approaching floods appeared on the front page of the newspaper

for a period of two months...Under incessant warning, they undertook massive preparations. Although the rivers fell just short of record heights at most locations, the communities were prepared for floods in excess of those that occurred. They stayed dry; they "controlled" the situation.

While this kind of prolonged warning is rare, this illustrates the kind of repeated warnings that put the coming danger in the context of past community experiences. The success of such warning is evidenced by the outcome.

In this section we have tried to summarize the warning process as a way of establishing the context for the types of nascent activity in the following section. It is this warning that initiates the activity of the crisis surge period and provides the stimulus for action to deal with the impending disaster. Wenger (1972:48) summarizes it this way:

The purpose of warning is to provide a threatened population with critical information regarding 'the existence of danger, and what can be done to prevent, avoid, or minimize danger' (Williams, 1964:80). As such, warning is the beginning to the human adaptation to disaster (Williams quoted by Wenger).

The issues of warning and communication in the crisis surge period are discussed in more detail in Chapter 10 on "Communications Behavior Under Crisis Surge Conditions."

Once people are stimulated to act by the warning and the belief that it may affect them personally, a series of decisions are required that will assess the various alternative actions, the protection or avoidance these actions provide and the hazards involved in their implementation. Wenger (1972:53-54) points out that there are:

...few analytical treatments of pre-impact activity. The Disaster Research Center has observed that pre-impact ameliorative preparations generally fall into three general classes of activities: (1) a continuing search for information regarding the disaster agent, (2) a readying of human and material resources, and (3) the instituting of preventive measures to (a) lessen the impact of the agent and (b) lessen the consequences of the impact.

The continued search for information regarding the disaster agent is discussed in terms of warning confirmation, searching, and monitoring. All three of these nascent activities are adaptive responses to the impending danger, but none of them take direct action for protection or avoidance. It is in the Janis and Mann (1977) interpretation that these types of activity reflect diligent and continued assessment of the situation as it evolves.

14.3 Confirmation of Warning

The continued search for information progresses in the crisis surge period through the confirmation of warning. The confirmation of warning is a universal observation that involves the search for additional information about the warning. It reflects an attempt on the part of the warning recipient to clarify the warning signal. Leik et al. put it this way:

Many officials assume, at least implicitly, that the public will (or should) respond automatically to the warnings that they issue. Most people, however, will not take protective action on the basis of a single warning message. This is particularly true when they have previously received warnings and had no hazard materialize. Upon receipt of a hazard warning, most people will make some attempt to check on the information.

Evidently, the warning signals will not be taken as sufficient stimulus for action, and confirmation of warning signals will occur.

Leik et al. (1981:36-39) makes several points concerning the confirmation of warning signals by the general public. First:

Receiving a tornado warning is a strong predictor of seeking additional information in all sites. In sites in which a tornado warning is issued, about two thirds of the respondents reported seeking such information.

Second, that in the model of public perception of risk during the crisis surge period in connection with tornadoes, receipt of the warning signal and its confirmation are important components.

Warning information, specifically the tornado watches and warnings, and warning confirmation are important variables....It appears that the public assesses their risk to tornado threats based on the official information they receive and their efforts to confirm these initial messages.

Third, the environment will serve as a source of confirmations in many cases. They draw on the work of Drabek (1968) when they conclude

...Many families did not consult with anyone, but looked to the environment for confirmation of the warning information. Going to the flood site and checking the water level or observing the behaviors of others around you (such as neighbors and local authorities) are all examples of observational confirmation.

Williams (1964:91) discloses a relevant psychological dimension of the confirmation of warning, when he suggests that:

Among the important psychological variables in the operation of a warning system involving human operators is the frequency with which the person receiving a danger message seeks confirmation before relaying it. This subjective need for feedback in a system may affect not only the relaying of the message from a given point to the intended audience, but also the system as a whole, through the overloading or bypassing of key points. It is most difficult for human beings to operate 'automatically' in a warning system.

Obviously the warning system must be activated to account for any delays that result from the confirmation of the warning by the officials responsible for its dissemination. This may be accomplished through the early issuance of warning or the issuance of the message together with a message to the senders, making apparent the need for rapid and undelayed transmittal of the warning message. This recognizes that the public is likely to confirm the message and upon confirmation take action. Therefore, it is paramount that the warning message be followed by additional warning messages which include appropriate protective actions. While time may not always permit, people should not be discouraged from confirming the warning message with friends, neighbors, and relatives. This serves to verify the warning message for both parties, and to disseminate the warning to those ignorant of the original warning signal. Hence, it is valuable to remember that the human components of the warning system are *sophisticated information processors* and thereby require time to personally process the warning information.

Part of this process is searching for supporting information or confirmation. Just as people are likely to hear, and pinpoint, various parts of the message, different people will require dissimilar amounts and types of confirmation. Furthermore, confirmation will contradict, to some extent, the source of the original warning, due to the nature of the message and the associated credibility of the source. Frazier (1979:343) proposes:

It is natural to seek supporting information. Different things affect the level of need. Research shows that people seek confirmation of warnings received over the mass media more often than they do for warnings received from a more personal process, such as from a neighbor or an official. Although independent confirmation is usually sought for the first warning, a second warning often seems to serve as confirmation of the first.

Thus repeated warnings provide a self-confirming message of potential danger. In addition, if the warning message includes an outline of the kinds of appropriate activity for the given circumstances, this kind of repetition serves to strengthen adaptive response to the impending danger. Frazier (1979:343) indicates factors that affect confirmation behavior:

Families that are united at the time of the warning are less likely to seek confirmation of the threat than are families that are separated.

This indicates that families that are together serve as 'built-in' sources of confirmation for each other.

The closer the person is to the place where the disaster is expected to hit, the more sources of information there are for confirmation and the more likely he is to hear the confirming warning by word of mouth.

Not only are the people that are more likely to require protective action more prone to hear the warning from various sources, but they are also most likely to receive confirmation of the warning message. Consequently, confirmation is more likely to come from the most credible sources associated with word of mouth. During the crisis surge period, or during times of impending danger, people tend to unite against a common threat, whether it be man-made or natural in origin. In essence, people tend to share the induced stress of the impending situation with members of their social network. This sharing tends to both confirm the warning and to reassure friends, neighbors, and relatives that they are not alone. Because humans are social beings, during times of impending crises, they are likely to join forces, to assure their fundamental needs of life, health, and protection against outside (environmental or other) forces. Therefore people join together in any decisions and pursue protective or avoidance objectives. Frazier (1979:346) reiterates:

...at times of danger people feel a great need to share their feelings and available information with friends and loved ones. So it is hardly surprising that a first impulse on hearing a disaster warning is to jump to the telephone.

This tendency can often lead to a convergence of calls for additional information as is documented by Brouillette (1966:17):

...even in those areas where electric and telephone service was not disrupted, the various units of the system had problems contacting certain persons. Convergence of messages on the telephone made it impossible for some organizations to contact particular parties to relay pertinent information to them. Thus, the South Bend Weather Bureau finally issued a bulletin to all broadcasting stations urging them to 'ask people not to call the Weather Bureau unless they have weather to report. We have had numerous poor joke calls and they tie up the lines.' (Weather Bureau Survey Team, 1965:41, cited by Brouillette)

The incidence of telephone lines being overloaded has been reported often enough to prompt public officials to request that the public refrain from the use of the telephone in times of crises. By urging the public not to use telephone lines, however, public officials may also be limiting an important avenue of dissemination. Frazier (1979:346) notes:

The 'public' is frequently urged not to use some channels of communication, such as the telephone, at time of collective trouble. Such admonitions, all the evidence indicates, are useless. People will use the phone since that is a normal, everyday habit. Instead of trying to stop the impossible--people calling one another at times of community stress--ways ought to be found to take advantage of such calls so as to improve the dissemination of warning messages.

These research results testify, in the words of Garrett (1971:21) "The public responds to warning by searching for additional information rather than directly responding by taking shelter." It is argued here that this response pattern of seeking additional information, often in the form of confirmation, is an outgrowth of the sophisticated nature of human beings as information processors.

It is imperative to recognize that the official warning signal can serve to confirm the onslaught of hazards that were identified in the crisis expectant period. Through the identification of environmental clues, or other preliminary signals of an event, individuals may be "expecting" a crisis to emerge. Thus, the official warning serves to confirm the impending hazard. Warning alone, or just clues of an impending hazard, are not likely to generate nascent activity. Leik (1981:39) argues (for the case of the tornado warning and response):

Warning confirmation, clues from the environment and plans for response all predict whether or not a person will seek shelter. Observing threatening storm clouds had its largest effect in the situation in which official information was not available. It is important to note that confirmation behavior and environmental clues can have negative effects as well as positive effects on taking shelter, depending on the characteristics of the event. For example, if a person seeks additional information in response to hearing a tornado warning or siren, and finds that the tornado is not headed in his direction, he will not seek shelter. The same is true of clues from the environment: if the individual sees that the skies above him are clear, he will not seek shelter.

Given the receipt of warning, the probability of nascent activity rests with the confirmation of the warning and its credibility. If a warning is perceived as inappropriate, given the individual's geographic area, response in terms of nascent activity is unlikely. If the warning message is received confirmed and credible, nascent activity is likely to ensue.

While the receipt of warning, confirmation, and credibility of a message can lead to action, there is no way of knowing whether nascent activity, in light of the impending danger, will be adaptive or maladaptive. The U.S. Department of Commerce, National Oceanic and Atmospheric Administration document both adaptive and maladaptive response to warning in the "Red River Valley Tornadoes of April 10, 1980:2-3).

Despite the excellent warning lead-time and multiple sounding of the sirens, some people of Wichita Falls either did not hear the warnings or failed to take prescribed lifesaving actions. More than 40 died, and about 1,700 were injured. As the storm bore down those who sought the safest refuge in their immediate surroundings generally fared well. Those who were caught in automobiles and trucks made up a high percentage of the fatalities. People from the shopping center took shelter in refrigerator vaults, in restrooms, and under counters. A number of families used bathtubs, hallways, and closets. Several got extra protection by covering themselves with mattresses and pillows. They survived!

It is possible that people need to be reinforced during the warning not only in terms of the danger's imminence and the probability of effects on the area, but also in reference to appropriate actions to protect themselves or avoid the danger.

Adaptive behavior in response to an emergency is not a new outgrowth of the situation, even in the surge period where an authenticated hazard has been confirmed via official warning. The surge period is by definition, a period of limited time.

The word "panic" has often been ascribed to this phase, although true panic behavior seldom occurs. However, much noneffective behavior does occur when there is an absence of a prepared plan or little provision for leadership to improvise an adequate response. A survey of the Worcester tornado disaster found much ineffective behavior during the warning period, which carried over in the emergency--even by hospitals in caring for mass casualties. (Glass 1970:65-66)

The research on confirmation of warning and the public response to warning signals has been adequately summarized by White and (1975:183). They posit three important factors in the public's response to warnings.

1. even though several persons may listen to the same warning message, there may be considerable variation in what they hear and believe.

2. people respond to warnings on the basis of how what they hear stimulates them to behave, and
3. people are stimulated differently depending on who they are, who they are with, and who and what they see.

In some instances, where the crisis surge period is particularly long, as in hurricanes, the original stimulus may serve to alert the area that further action may be required at a future time. In such instances, one adaptive response consists of the continued monitoring of the situation as it evolves. Paredes (1978:48-49) observed the monitoring activity in response to Hurricane Eloise in September of 1975 in Panama City in Florida:

Even though more than 70% of the respondents were monitoring weather reports at least every hour on the night before the hurricane hit, less than half of them stayed up past midnight that evening.

More residents of the beach area (30%) reported making no preparations for the hurricane than did respondents in the other two areas, but more of the beach people (62%) stayed up past midnight;

Despite a vast majority of people that engaged in some kind of monitoring prior to the impact, distinct gaps in the monitoring process, in this case for sleep, might have left significant numbers of people vulnerable to the impact of the hurricane. While the early evening monitoring was significant, the cessation of the monitoring by over half of the respondents in this study does not mean that other arrangements were or were not made. The data do not appear to answer the questions regarding the shifting of monitors, or the informal systems among neighbors to monitor for the neighborhood and the like.

14.4 Evacuation

Obviously the beach people engaged in less protective behavior, perhaps because they felt it would do little to mitigate the effects. Conversely they tended to monitor the storm more diligently, perhaps because they felt they would be affected first, and felt responsible for their own warning and the warning of others. A more cynical interpretation might suggest that the beach people were not well integrated into their social network and thereby felt they must monitor the situation for themselves as opposed to the people further inland who had both the beach people and their neighbors to warn them in the event that the threatened hurricane materialized. The data are not sufficiently detailed to distinguish among these alternatives. Two findings by Paredes (1978:48-49)

tend to suggest that the beach people felt somehow obligated to warn themselves and their community. First, while most of the respondents relied upon the media for information concerning the hurricane, nearly one third received their first warning of the actual landfall via interpersonal social networks. And second:

Fifty-nine percent of the respondents evacuated their homes, three fourths of these doing so between 2:00 a.m. and 4:30 a.m. on September 23, 1975 [the day of landfall].

While these findings do not confirm any single explanation they are consistent with the explanation that the beach people had assumed protective action to be of little value, and decided that avoidance via evacuation was to be their adaptive nascent activity. The size of the eventual evacuation and its timing suggest that while the monitoring of the prior evening had been suspended by a number of respondents, other means of alerting these people were available.

These conclusions must be tempered by the fact that even propositions that seem eminently reasonable and rational--to the point of being assumed universals--are not always borne out through observation. For example, it seems quite reasonable to expect those people that recall a warning to be more likely to act upon it. Yet in his examination of hurricane warnings Baker (1979:12-13) cites instances in connection with hurricanes Carla and Eloise that both support and fail to support such a statement.

Respondents who recalled being advised to evacuate before Carla were significantly more likely to leave than those who had no such recollection, but the finding was not evident in Eloise. Officials going through a neighborhood 'ordering' evacuation were not found to have made a difference in Eloise either. In Carla civil defense personnel were slightly less successful in eliciting evacuation than public officials.

This appears to indicate that people who hear a warning are not necessarily more likely to respond to it. Yet there may be other explanations for this observation. Baker (1979:15-16) proposes one possible reason for this discrepancy when he explains a finding regarding the recall of forecasted wind speeds for hurricanes Camille and Eloise

Residents who could recall what the predicted surge height had been 10 hours before landfall could not be differentiated from those who could not recall, but those who recalled that four-hour prediction were actually least likely to have left. The latter counter-intuitive finding may be attributable to the fact that most leavers had evacuated more than four hours before landfall, thus they would be least likely to have heard the surge prediction at that late hour.

These findings suggest that the situation in disasters is sufficiently complex that even seemingly simple hypotheses require relatively complex information to be tested properly. Hence, we must exercise care when reporting findings so as not to suggest implications that are beyond the ability of the data at hand. In this case the reported fact that in hurricane Eloise recall of the warning message did not seem to increase the likelihood of protective action may simply be an artifact of the data's insensitivity to when the "official warning was issued" and who was in the area to hear it.

The public seems to be inherently sensitive to their own vulnerability. This would suggest the people that perceive themselves as more vulnerable would be more likely to take protective action than people that feel no such vulnerability. In this vein the type of construction material and building in which one lives would be expected to be related to the degree of protective action. Baker (1979:19) reports such information in connection with studies of hurricane Camille.

Age of the house was not associated with evacuation, but people living in two-story structures were less prone to leave than people living in one-story buildings. Mobile homes were categorized as a type of construction material (rather than wood, brick, veneer, or masonry), and their dwellers were the most probable to evacuate.

Baker (1979) goes on to point out that in a survey of individuals following hurricane Eloise by Windham *et al.* (1977) mobile home dwellers were not significantly more likely to evacuate. However, this study classed mobile homes as a part of other types of dwellings including single family and apartment. This confirms the vulnerability explanation, since the issue is most clearly specified in terms of building materials as opposed to dwelling type. This is in part due to the fact that the vulnerability issue is considerably confounded when cast in terms of dwelling unit, where single family dwelling units might well be of brick or wood construction, or for that matter mobile homes.

The more or less standard indicators of social status and social structural location tend to be associated only in relatively minor ways with the adoption of protective activity. This may reflect the often observed truism that tragedies such as these major disaster tend to effect people without regard to their social standing. In essence who a person is in the community has little to do with the reasons one takes protective action. Baker (1979:19) highlights the point:

The most consistently collected data might be grouped loosely under the heading of demographic attributes of the respondent. Certain characteristics--sex, marital status, and occupation--were unassociated with evacuation in any of the four studies [of

hurricanes]. Education was related to leaving in only one of the four studies in which it was tested; income, number of children in the respondent's family, and the number of families in the respondent's dwelling were tested and found associated with evacuation only in the Carla study. Whether the respondent owned or rented his or her dwelling was investigated in three of the studies but found to predict evacuation in only one.

In part this lack of association between social structural-demographic indicators and evacuation may be the result of the fact that the household or family is the emergency unit of action rather than the individual. Hence, respondent age and sex have little meaning for the actual unit of action. Contrary findings indicate that the number of children, income and number of families are tenuously related to protective action when tested. These variables are more representative of the family unit of action.

Factors more closely associated with the processes of decision-making and the pursuit of safety are apparently more strongly related to evacuating. One of these factors concerns the number of people in one's area that are evacuating. This is consistent with the idea that people confirm the warning message and the nature of appropriate protective action with the neighbors, friends and relatives. This is also in agreement with the intention to warn others in time of need. Baker (1979:21) argues that the actions of people in one's social network are taken into account in the decision to take protective action.

One of the best predictors consistently identified is the extent of evacuation which took place in the respondent's neighborhood. People who lived in areas from which most of their neighbors evacuated were also likely to have evacuated. One explanation traditionally proposed for this association is a conformity phenomenon: people are reluctant to leave if their neighbors are not leaving and are reluctant to stay if their neighbors are not staying. The variable is hopelessly confounded with other predictors, however. The association probably reflects the fact that evacuation rate was greatest in the most hazardous areas and that Civil Defense or other officials advised or ordered evacuation from a neighborhood in which most others did the same, he or she and the other may have been motivated primarily by a commonly perceived need to leave and may have acted independently of one another.

Baker (1979) is careful to point out that the evacuation of neighbors is of critical importance as reflected in the data but that it is difficult to interpret. In more hazardous areas that are warned more frequently, neighbors may jointly perceive their risk to be at higher levels both of which would contribute to higher evacuation rates. What is needed is some focused work on the processes used in making the decision to take protective action.

14.5 Prior Disaster Experience

People with prior experience would be expected to have differential evacuation rates depending in part upon the nature of the previous experience and the perceived similarity and differences between that experience and the impending hazard. Carter, Clark and Leik (1979:24-25) cast prior experience in an effective way, when they examined the warning process associated with four hurricane areas:

Yet another data item which may be used to predict the probable evacuation response of the public to a warning applies only to those who have previously experienced a hurricane. Each of these respondents was asked if, as a result of the hurricane they remembered best, they had changed the way they would deal with hurricanes after that. Of those who indicated they had changed, we asked if they are now more likely or less likely to evacuate. While most of the "changers" (61 percent) indicated that they are now more likely to evacuate, 17 percent declared that they are now less likely to evacuate, and another 22 percent made other responses.

While in this case prior experience is clearly demarcated, tending to make it conceptually usable in terms of a predictor variable, in many cases prior experience is conceptually unclear and not an effective determinant of future acts. This use takes advantage of the Mannheimian "Critical Experience" concept by probing the nature of the change as influenced by the most remembered experience.

It is evident that prior experience serves as a source of information for impending hazard. In some cases it has been shown to teach the appropriateness of specific activities and the expedience with which they should be conducted in emergency situations. Haas and Trainer (1973:2751) remark on this property of experience with tsunamis.

About half the leavers, [those evacuating] when asked, indicated one or more things they would do differently should they receive another similar tsunami warning in the future. The intention to respond faster and more purposefully to a similar warning was indicated by 66% of them.

But such learning from experience does effect the potential for adaptive protective action in both positive and negative ways. Depending on the nature of the prior experience the public may find that no action is called for on the basis of prior experiences with similar hazards. Koster (1978:27-28) draws on the work of Moore *et al.* (1958) in pointing out that prior disaster experience can have a negative effect.

Moore *et al.* (1958) were able to collect information in Texas and

Louisiana on whether people evacuated or not and whether or not they had experienced a disaster prior to Hurricane Carla. The area had had much experience with hurricanes and more specifically had been seriously affected by Hurricane Audrey in 1957. The evacuation behavior during Hurricane Carla compared with previous disaster experience indicates that previous disaster experience is associated with evacuation. It is also interesting to note that those with specific hurricane experience did not evacuate as frequently as did those with other types of disaster experience.

Moore et al. (1958), were also able to test the hypothesis that those who survive earlier disasters repeat what was rewarding behavior in the previous situation. Individuals with disaster experience were asked whether they had evacuated in previous disasters. The data support this thesis.

Here disaster experience is a confounded concept that may include too general a notion to be operationalized. Experience may range from minor involvement, perhaps even including reading about it in the local newspaper, up to personal and direct confrontation with the disaster, including loss of personal and real property, and suffering personal injury within the family. Taking no protective action may well be rewarded among the typically larger population with peripheral experiences with the crisis. When an area is experiencing a crisis of this type, specific sub-areas within it may not be directly effected by the "brunt" of the impact.

In communities experiencing direct and repeated exposure people are likely to develop specific plans for dealing with these periodic events. As Carter, Clark and Leik (1979:24-25) point out some perspective on the public's response to:

...warnings is possible through their listing of the contents of their home plan for such occasions. Of the approximately three-fourths of the sample who claim to have some type of hurricane plan, only about one-half have provided for the possibility of evacuation in it. (This varied from about one-third in one large city to about two-thirds in another large city located nearby with approximately the same exposure to storm surge.)

While this is negatively stated it shows that the public at least claim to have household emergency plans on a ratio of three to one. Furthermore it indicates that one out of every three households in these areas have made provisions for the possibility of evacuation. This does not necessarily mean that these people are exposed directly to the insult of the hurricanes, but rather that the general area had experienced repeated hurricanes.

In cases of direct and repeated exposure to the impact of disaster many communities develop, sometimes informally, disaster subcultures aimed at the mitigation of crisis. The response of the disaster subculture is often limited to the specific disaster agent and based on the worst disaster of recent memory. Koster (1978:28-29) summarizes the nature of the disaster subculture.

A disaster culture includes norms which indicate how the threat is to be perceived, what individual action is to take place in a specified condition, how organizational members are supposed to act, e.g., report for work immediately, etc. It includes knowledge about how warning cues are to be interpreted, the potential destructiveness of the disaster agent, and the efficiency of particular types of action. It includes a technology, such as a warning system and tools to avoid the worse consequences (i.e., hooks on the ceiling on which to hang furniture in flood conditions, taped plywood covers for windows, shelter sites picked out and stocked, etc.). Such disaster cultures emerge in communities with considerable experience in repetitive situations. They gradually learn that certain events are repetitive and perhaps even predictable. On the basis of their previous experience and preparation, such communities are able to cope with events on a routine basis that years before would have been considered disastrous. In this sense, over a period of time, a community builds its capabilities to meet the demands it has previously experienced. Evidence of disaster culture is clearly seen in certain parts of the United States, such as certain sections of Texas, Louisiana, and Florida which often experience hurricanes, and areas of the Midwest subject to tornadoes. Many communities, in such localities, 'specialize' - so to speak - in handling these frequently occurring natural disasters. Similar disaster cultures also develop in mining areas where accidents are somewhat routine. (cf. Dynes, 1971).

Inasmuch as there has not been any prior experience with the consequences of nuclear attack, presumptions are that public response will be susceptible to guidance by those in authority. Perry, Lindell and Greene (1980:ix) state:

Lack of prior experience with nuclear hazards would probably generate a high degree of "reflexive fear" (Janis, 1962) making compliance with protective measures more likely

This would be highly probable given an authoritative directive such as one given by the President of the United States. Additionally, given that some lead time was established by the media's continued reporting of ongoing events--establishing a crisis expectant period--the actual warning would be likely to confirm the seriousness of the situation and thereby be self confirming. And finally in Perry, Lindell and Greene's terms (1980:ix)

Since the actual destructive potential of attack is objectively great--and because the potential has been exaggerated in the popular literature--citizens would tend to define personal risk as exceptionally high.

This definition would lead to a high degree of nascent activity which through proper direction could be channeled toward adaptive means of dealing with the potential nuclear attack hazards.

While it remains somewhat ambiguous as to the effect of prior experience on the adoption of protective action, much of the confusion results from the concept definition. The directness, personalization, severity and recency of the prior experience, also determine the adoption rate of protective activity.

Mileti, Drabek and Haas (1975:15) suggest that because the prior experience is likely to generate interest in preparing for any future occurrences, and because direct and repeated occurrences permit a clear image of the potential for harm, prior disaster experience is likely to make nascent activity more effective in terms of protection and avoidance and thereby more adaptive. However, the authors are quick to point out that prior experience can also lead to a false sense of security by comparing what happened in previous events to the impending event--this is particularly true in cases where an area had a series of relatively minor hazard occurrences.

14.6 Roles and Social Groups

As is evidenced by the tendency for warning recipients to confirm the warning message with other people in the social network, as well as with the environment, people tend to respond to warnings in the surge period in social groups. Small group reaction to warning signals during the crisis surge period will be the subject of this section. Individuals are not inclined to panic because their response is decided by the social unit of which they are a part. When warning is cast in terms of "...a statement of the problem, and a proposed course of coping behavior" (Koster, 1978:7), as in the crisis surge period, warning recipients are disposed to react in groups. In Koster's (1978:14) work "...the warning recipients sought to become part of a group," to cope with the impending danger. Quarantelli and Dynes (1977) approach the social nature of disaster response from a different conceptual framework, but come to a similar empirical point of view. They propose:

a number of the key groups operative in emergencies do not have the classic structural dimensions of formal organizations particularly of bureaucracies, as Max Weber postulated and as much of sociological organizational theory has assumed since his formulation (p. 31).

These amorphous groups are termed indistinct groups by Quarantelli and Dynes (1977). The authors point to the examples of the Red Cross and Salvation Army, which appear to have enough members to act, but lack definite boundaries in terms of membership, sub-unit functions, relationships of units, and global as opposed to immediate goals. One might further add to this list concepts such as the loosely formed social networks associated with neighborhoods and friendships. These groups are similarly described as embodying indistinct memberships, no clearly defined relationships and functions, and vague lines of authority, at best, and perhaps with no explicit goals. This would indicate that, from the perspective of an individual, people in such loosely formed social networks might be termed indistinct groups as well. Additionally, this being so, these groups and their existence tend to indicate that people respond to crises in terms of these loosely formed indistinct social groups.

In Quarantelli and Dynes' (1977) terms a second type of group that populates disaster situations are those consisting of relatively small numbers of people, but with identified roles and lines of authority.

...many organizations and groups operative in emergencies have the characteristics of formal organizations except for those features that depend on the organization's size, which is often not an insignificant factor. (p. 31-32).

Quarantelli and Dynes give the mayor's office, the local civil defense agency, and radio and television stations as examples. Their major characteristic is that they are small in size-usually under a dozen members. They are characterized by their roles and functions as in larger organizations. Further augmenting this list, families and work groups have a formal role structure, with designated functions, and are relatively small in size. The roles and functions obviously are not those for crisis situations but these roles may well serve as the foundation on which to build appropriate adaptive behavior in the event of an emergency situation.

The third type of group to participate in emergency response to hazards is termed an emergent group. These groups have little or no existence prior to the onslaught of disaster, but rather emerge during the crisis to deal with the consequences of the event. Quarantelli and Dynes (1977:31-32) put it this way:

...disaster situations tend to be peopled by emergent groups, entities that had no existence prior to the crisis, these often have only transitory existence, but their functioning may be crucial to the whole trans- and post-disaster response (Bates et al., 1963, Quarantelli, 1966, 1970; Parr, 1969, 1970, Taylor et al., 1970, Forrest, 1972, 1977).

Examples of these emergent groups given by Quarantelli and Dynes include religious interfaith groups and search-and-rescue groups. One could argue that any group that happens to be together as a crisis develops might evolve into an emergent group. These groups might be best delineated as groups that did not exist prior to the impending crisis and that fill emergency needs in ad hoc ways.

Drawing upon the studies by the Disaster Research Center at the Ohio State University, Dynes and Quarantelli (1968) observe

...that very often there is, at least in ideal-type terms, a sequential involvement of institutionalized and new groups in community stress situations. That is, established organizations tend to be the first to respond in disasters. They are followed in their response by the involvement of expanding, and then extending, organizations. Only when these more traditional organizations are participating is it likely that there will be involvement of emergent organizations or groups. (Quarantelli and Dynes, 1977:33-34)

This would appear to suggest that individual level crisis response may be predicated on the "principle of least resistance." This principle reflects the notion that the public takes advantage of existing social organizations to meet the needs (including emergency needs). Existing organizations seem to have a higher priority than new organizations in meeting needs. This principle would also account for the fact that even with the existence of many organizations, new organizations might form to meet coordination requirements among them. That is, when needs remain unfulfilled, or when there are no organizations to meet the existing or emerging needs, new social entities, whether they be formal or more informal in nature, will emerge to fill these obligations. Further it should be indicated that emergency requirements often constrain existing organizations' capabilities, and thereby serve as catalysts in the emergence of new groups, or organizations. Quarantelli and Dynes (1977) appropriately note that in many cases these emergent groups are made possible by the conditions present after the existing organizations enter the emergency response picture

This principle implies that the group with whom one is with at the time of occurrence is the primary group or path of least resistance for as long as this group can handle the situation. While meeting the emergency needs of the group, few others will be brought into the emergency response at least by the group itself. When this primary group fails to meet (or appears to be unable to meet future needs) formal organizations and then the expanding and extending groups enter the emergency response picture. Likewise the people at the scene of the crisis enter the emergency response scenario first. Other existing organizations will respond once there is a realization that the public cannot fulfill the needs of the community

If a crisis emerges slowly enough for family members to be consulted or united prior to the impact, existing family groups will, when possible, respond to the impending emergency as a unit. If in the course of that response it becomes evident that the response will or is likely to be inadequate, and time permits an altered strategy for dealing with the impending danger, the family unit may join forces with other families in the neighborhood, or pick up other unattached individuals to help in the meeting of these needs. In addition, given that emergency organizations exist specifically for the impending hazard, the principle of least resistance would indicate that these more formal existing organizations will be utilized. This explanation is consistent with the evidence reported by Dynes (1975:27) that,

The primary acting unit is the family and the exercise of authority tends to occur within the family context. Carroll and Parco (1966) reported that, subsequent to a volcanic eruption in the Philippines, over 90 percent evacuated as family units. In addition, these units often absorbed unattached persons as a form of mutual aid.

Dynes (1975:27) goes on to indicate that "... most of the family units were able to make their own arrangements for emergency shelter ...". A fact borne out by the public's response to many kinds of disaster, including the response to the Three Mile Island accident in Pennsylvania. Dynes (1975:27) uses a case of Indian response to disaster, but the point remains the same for American response as well: that people react to emergency in the context of existing social groups and the roles associated with those groups.

The extent of the kin assistance would vary, of course, with the magnitude of disaster impact and with the location and resources of other family members In any case, behavior immediately prior to impact and in the emergency period tends to occur within the context of conventional roles, particularly family roles. The images which are sometimes drawn of widespread irrational behavior or of apathetic dependent behavior do not seem to be revealed in the research literature.

It can be added that the capacity of the family institution to deal effectively with the impending disaster may determine to a large extent the availability of resources within the family to handle the impending hazard. That is, not only the size and magnitude of the disaster, but the size and distribution of resources within the family used to manage the impending disaster, determine the entry and level of participation of the more formalized emergency response organizations. Hence, from this we might posit that dense and highly connected social networks, such as closely associated extended families, would be less likely to require the assistance of formally organized emergency response organizations.

Drabek and Stephenson (1971:199) maintain that extended families serve many functions in the course of disaster. As is noted earlier, extended families as well as other members of the social network serve as warning confirmation sources.

Extended family relationships were crucial as message warning and confirmation sources, and even more important as an evacuation point. Telephone conversations with relatives during the warning period were usually a key factor. It is sometimes suggested to persons that it is better not to 'tie up the phone lines' during emergencies. Rationally, this may be good advice, especially from the viewpoint of a total community perspective. Our findings suggest, however, that such advice will be largely ignored in situations like this flood. It may be far easier to change the existing technology to preclude overload than trying to change family definitions, which generate such behavior. Also, it should be noted that while the news media notified the largest number of families, it had the least effect in producing adaptive behavior. Warning messages from friends and relatives were sometimes more effective in this regard than were those of the mass media.

While it may be technically difficult to institutionalize a kind of free communication system that would not overload in the event of disaster, communication among family members serves to confirm official warnings, disseminate the warning to those that might otherwise have missed it, and draw together family resources to deal with impending danger. These functions release tension and lead to protective, adaptive action more quickly, as well as reflect the path of least resistance for emergency action. Policy concerning the public's response to impending disasters should take advantage of these kinds of existing institutions and their resources in planning for potential disaster. Drabek and Stephenson (1971:200) describe a disaster situation consistent with this approach:

Important functions performed through conversations with relatives may greatly increase the effectiveness of the official emergency organizations if they plan accordingly. For example, in addition to serving as warning, confirmation, and evacuation sources, relatives and friends provided transportation for about 17% of the families. This assistance was not provided until after some type of interaction took place, usually via telephone. Generalizing from the random sample of 278 families to the entire group that evacuated (3700 families), approximately 600 families may have relied on such means of transportation. Had telephone communication not been possible, the tasks of police and other agencies would have been greatly increased.

Thus, by taking advantage of the existing propensities of the family to

take care of their own, the emergency response of official organizations was enhanced, which reflects the utility of taking advantage of the principle of least resistance.

Likewise individual behavior in a disaster situation is influenced by the social context of the individual, particularly those roles with which the individual is most closely associated, such as the family. Burton, Kates and White (1975:106-7) point out that "...the role of the individual in a social group may be influential..." in the decision making process associated with the selection of adjustments to the impending hazard. Consistent with this and the principle of the path of least resistance as a determinant of behavioral response to impending disaster is the conceptual notion that what a person does to mitigate the impending crisis is in congruence with the individual's capacity to act and the social responsibility for that action. Burton, Kates and White (1975:106-107) draw on Heberlein (1971) in making the point.

In explaining such [adoption] behavior, the perceived roles of individual and government may be highly influential. In Heberlein's theory (1971), a major component of any choice is the sense of responsibility that the individual has toward the causes of the situation and the possible remedial action. According to this view, what the individual does is strongly related to his recognition of his capacity to act and his sense of social responsibility to do so. The sense of individual capacity in turn is related to the sense of efficacy, of knowing what is to be done and when.

Hence, within existing institutions, such as the family or work-place, the role and responsibilities are already in existence, and thereby act as a catalyst for the principle of least resistance. For example, when a family is faced with an impending disaster situation and they are located in close proximity to one another, the leadership roles associated with that group are likely to remain unchanged until such time as the existing leaders fail to be able to meet existing and emergency needs. In such small social groups the group, through its leaders, perhaps will have a sense of responsibility to one another and thereby the only remaining issue is the group's capacity to deal with the impending situation. Furthermore, one could argue that the group leader is likely to have a sense of the capabilities of the group members under normal conditions and may be best equipped to assess the ability of the members to adapt their capabilities to emergency situations.

For people that hold central roles in more than one group at a time, the principle of least resistance can create a situation of role conflict. That is, one person may well be asked to fill a role in the immediate group without knowing where his or her family is and how they are coping with the impending disaster or emergency situation. One example of this kind of role conflict is mentioned in passing by Worth and McLuckie (1977:13) in their description of events in a Douglas County Colorado Flood. "The

Douglas County CD Director went home to check on his family and then instructions to go "up on the hill" if things got bad enough." In events around the country the emergency officials are confronted with a situation of which role to perform if the crisis situation affects their families and friends. In the case of the Three Mile Island accident local emergency officials evacuated their families in advance so that a general evacuation order were given they would not have to worry about their families. This seems to be an effective way of avoiding the conflict situation, but there may not be enough time in many disasters to permit the flexibility to take that kind of action in advance of occurrence. Conversely, if predetermined plans of action for emergency official families were in place, some of the worry associated with their loved ones, at least, could be avoided, and perhaps emergency officials could feel more confident that their own families were being provided for which would serve to reduce the amount of role conflict and its impact.

14.7 Implications

In the crisis surge period, perhaps the most significant factor generating behavioral response is the warning message. Certainly the important factor in affecting adaptive response to impending danger is inclusion of appropriate response activities in the warning message. Authoritative, accurate and informative warning messages elicit appropriate activities from the general public and thereby increase their overall survival chances. While warning messages should strive for accuracy and succinctness, overcautious or tentative messages can lead to confusion and indecision. Overly cautious warnings do little to enhance the overall community preparedness, particularly where prior experience has been peripheral.

Perhaps the most universal response to official warning is confirmation of the warning. Whether it be by observing one's environment, checking with public officials, discussing it with friends, neighbors, relatives and co-workers, or receipt of repeated warning from various sources, communication, confirmation of warning is most often the first response to a warning. Official warning serves also as the validator of the clues of an impending hazard. Where the clues of hazard associated with the expectant period have alerted people to the impending danger, official warning acts as the confirmation of the informal warning process of the expectant phase of crisis. While warning confirmation fails to serve as a protection or avoidance mechanism, it validates the need for action, stimulates people to unite in primary social groups for emergency response and mobilize resources for an effective response to the impending danger. The confirmation of warning, while having these positive effects on emergency preparations, can use vital time required for protection and a fast response. Because humans are sophisticated information processors, time, when available, is required both for information to be processed and for feedback within the system. Warning dissemination

require confirmation of the warning prior to passing on the warning, and warning recipients require confirmation of the warning prior to acting on its message. Both require additional time in the warning response period. In instances where little forewarning is anticipated, warning messages should be designed as self-confirming, therefore shortening the response time.

The most common protective response to official warning is evacuation. This is no doubt due to the relative costs of such preparedness measures, the relative availability of required resource, ease of overall implementation, and its effectiveness in mitigating or avoiding the effects of the impending crisis. While such conditions may not be universal, they certainly approach it in the United States. The existence of the interstate transportation system and the proliferation of personal transportation in the form of automobiles makes evacuation readily available across the country. Those without personal transportation show an almost remarkable ability to arrange for it with members of their social network, most often their own relatives. Further, our people seem to have a sense of personal vulnerability to the more common natural hazards. Can such a sense be "cultivated" for the more dreaded and uncommon hazards? The answer remains unclear though there is little question that such a sense of vulnerability and of the likely effectiveness of known countermeasures would effectively contribute to appropriate and adaptive responses to official warning. The spontaneous evacuation around Three Mile Island suggests a positive answer, given the preponderance of evacuation response to authenticated threats, emergency preparedness will have to deal with the movement of people, whether such evacuation is officially part of preparedness or not. Furthermore, incorporating evacuation into an all hazards emergency response system is cost effective, implemented with greater ease, and takes advantage of the public's tendency to relocate in such ways in any crisis event. Evacuation may not be the best response to every hazard; for example, tornadoes may be better handled via sheltering, particularly in urban areas. Hence, policy-makers must exercise care not to project a rigid emergency response system, but rather a flexible system that takes advantage of existing public propensities and made allowances for the fact that people are cautious when preparedness needs run counter to existing needs.

Finally, a policy for emergency preparedness must anticipate the social nature of our people. Rather than fleeing in individual panic public response to official warnings is better characterized in terms of response in primary social groups. Such groups tend to enhance preparedness measures by bringing to the emergency situation a relatively known set of capabilities, resources, and perhaps most importantly, a set of existing roles which provide an authority structure for social response to disaster.

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15. IMPLICATIONS FOR EMERGENCY MANAGEMENT

This report has focussed on behavior and attitudes under crisis conditions. As such, these attitudes and behaviors are juxtaposed to those associated with periods of relative normalcy in order to identify any changes in daily routine as crises emerge. Attitudes and behavior in the pre-crisis period, that is prior to impact, are the primary concerns.

The emergency management concepts of crisis expectant and crisis surge have proved useful, as identifiable periods of crisis. These phases appear arbitrary because different people in the affected area may experience different phases of crisis at the same time. For example, during the Three Mile Island incident, the Governor's advisory to preschool children and pregnant women began the crisis surge phase for these individuals. While others saw this advisory as another cue of crisis expectancy. Despite this conceptual fuzziness, the concepts show considerable utility because they demarcate changes in public responses. The shift from routinized attitudes and behaviors of normalcy periods to the consolidation and maximization of resources and capabilities in the crisis expectant period is one example. Another is the use of these human and material resources in the crisis surge period as a means of protecting or avoiding the potential harm.

The public seems to respond to crises in remarkably similar ways, and their aims parallel those of emergency preparedness officials: enhancing the survival chances by reducing harm, lessening property damage and minimizing loss of life. The public response to impending danger further reflects a strong commitment to protecting themselves, their loved ones and even those generalized others with whom they may become associated--a sentiment of enormous use to emergency officials.

While it can perhaps never be established whether it is real or a function of scientific pursuit, the public seems to exhibit a remarkable propensity to engage in structurally similar activities in response to crises. Beginning with a general response to crises in familiar ways, they tend to respond in terms of the routine. In this sense it is because some hazards are less familiar than others that emergency plans become helpful in guiding emergency response. If public memory was perfect and all hazards equally familiar plans might not be needed. Because these conditions are not met and people tend to respond to hazards in relatively familiar ways, plans and particularly plans that are well understood become part of the context for normative response to crisis.

The second way in which people respond similarly to disasters consists of general information seeking, a characteristic of the crisis expectant period. As people become alerted to the potential for danger, they tend to seek additional information or specification of the hazard's

etiology (when it will occur, how it will affect them, any clues of its imminence, and what to do to protect themselves from harm). Much of this information may be obtained from the environment via the human senses. For this reason off-the-shelf emergency preparedness materials may be best suited. This kind of material can provide information about the nature of the potential hazard, interpretation of any clues of impending hazard, guide (in outline form) possible adaptive responses to the crisis, and identify potential mechanisms for avoiding the hazard. These materials would contribute significantly to the emergency preparedness posture and take advantage of information seeking propensities. Advantage would also accrue from the fact that humans are sophisticated information processors with incredible ability to detect personal vulnerability and respond appropriately, if they are given the correct information and guidance. Finally, such off-the-shelf materials could serve to place an appropriate (though not total) responsibility for individual safety upon the individual. Like other safety devices, such as seat belts, protective eyewear, and smoke detectors, such materials could either be utilized or disregarded by the individual. The informed choice for (or against) protection would rest with the individual.

Another way people seek information concerning the potential for hazard spans the crisis surge and expectant periods. This is the confirmation of warning. It is a check of clues with public officials, family, friends, relatives, coworkers or neighbors, or by observing the environment. Confirmation activities occur within time constraints but serve particularly in the social network, to disseminate the warning message, unite primary groups (at least in terms of getting together on current and future activities), and mobilize resources and capabilities for response to the impending emergency. Preparedness measures can take advantage of these adaptive aspects by enhancing warning belief through clear, concise, and informative official warnings from credible sources. This maximizes potential response time. This is the way that effective, authoritative, verifiable and early warning takes advantage of probable information seeking and confirmation activity, thereby setting the stage for an effective public response in the crisis surge period.

Third, there seems to be a propensity to evacuate to avoid crises of nearly all kinds. While this could result from research reporting and scientific pursuit, it does make good sense. The relative costs, availability and ease of implementation make evacuation particularly attractive, while the overall effectiveness is left unchallenged for most hazards. This combination of characteristics makes evacuation a sensible response to hazard.

The final way that people respond to crises in similar ways is the propensity to respond in groups: particularly families. This group response to emergency situations facilitates the emergency response posture by consolidating resources, both material and human, bringing an extant social

role-structure and associated authority to the emergency response. The assessment of the situation, and of the aggregate capability and resources are the only remaining issues prior to response. Further if the risk is considered high, the capacity to deal with it is likely to be found via the principle of least resistance within the family and extended family. Responding in groups also tends to ease tension by placing each individual in the familiar social context of the family or other group.

Because of these marked similarities in response to crises across a variety of hazards, an all hazards approach to emergency management seems to be quite realistic. An integrated emergency management system can rest on the foundation of these similarities, while adapting to special features of individual types of crisis. Such an approach takes advantage of existing similarities in response, while remaining flexible enough to accommodate existing differences adequately. While an allocation of resources to essential standby emergency capabilities is a near universal among societies, this allocation is not necessarily limitless. Hence, an all hazards approach to emergency management seems to utilize human, material and fiscal resources to develop and maintain emergency response systems most effectively. The all hazards approach is a credible, responsible, effective, enlightened approach to emergency management that rests on tangible empirical evidence. Caution should be exercised, however, to avoid overplanning, detailing all possible contingencies. People do not always require, nor do they want such detailed response plans. Efforts should be aimed at the fundamental responses to hazards and should highlight the nature of special circumstances that would alter this response set. Sufficient detail about the characteristics of each crisis can be provided without having to structure each response to these differing hazards. The key is flexible guidance that facilitates the public's response to hazard.

APPENDIX A

CRISES: BEHAVIOR AND ATTITUDES

Jiri Nehnevajsa

* Communications/interaction content

3. Patterns of consumption

- (a) Changes in food consumption
- (b) In alcohol consumption
- (c) In use of over-the-counter drugs (tranquilizers, barbituates, etc.)
- (d) In use of prescription drugs
- (e) In tobacco consumption
- (f) In purchases (supplies, equipment, etc.)

4. Changes in institutionalized participation

- (a) Absenteeism from work
- (b) Absenteeism from schools
- (c) Attendance of scheduled events

5. Mobility changes

- (a) Changes in use of private transportation
- (b) Changes in use of public transportation

6. Health changes

- (a) Sleep patterns
- (b) Fatigue
- (c) Irritability
- (d) Anxiety/depression
- (e) Stomach pains/troubles
- (f) Headaches
- (g) Visits to physicians
- (h) Visits to/purchases at pharmacies

7. Informal social participation

- (a) Changes in informal visiting patterns
- (b) Changes in hospitality patterns

8. Crime

- (a) Changes in crime against property
- (b) Changes in crime against persons
- (c) Changes in "victimless" crimes (e.g., drug abuse)

9. Changes in institutionally scheduled events

- (a) Cancellations

I. INTRODUCTION

Identified here are some key dimensions of behavior and attitudes considered in the literature search and documentation process.

Notice that the focus is on "changes" in attitudes and behavior; and on such "new" behavior as may become manifest in a crisis situation though it would not be expected to manifest itself under "normalcy" conditions. By addressing behavioral and attitudinal "changes," we are also, ex definitione, in a position to identify the "normalcy point of departure," that is, what is the "change" from? This is an essential aid to limit the need to consider "normalcy" attitudes and behavior as a special case since this, of course, would prove to be a search for just about full knowledge of the institutionalized patterns of social existence.

By dealing with "changes" as they are reflected under crisis conditions, we address only those major aspects of attitudes and behavior under "normalcy" which, in fact, tend to be directly impacted by an evolving crisis.

II. SOME BEHAVIORAL DIMENSIONS

Some of the action aspects that represent behavior under crisis involved in the literature search are listed here. Other behavioral specifics evolve out of the literature and data search itself.

1. Vigilance

(a) Changes in information seeking

(b) Changes in receptivity to information both with respect to:

- * information about the crisis, and

- * information as to what to do to respond to it adaptively

2. Communications/interaction

(a) With family

(b) Friends and neighbors

(c) Officials

in terms of

- * Intensity and frequency

- * Means used

(b) Reschedulings

in terms of

- * Schooling and school events
- * Work place activities
- * Sports events
- * Voluntary association events
- * Cultural events (concerts, etc.)
- * Public meetings

Some of the "new" behavioral dimensions include at least the following:

10. Formulation of preparedness plans
11. Preparedness related to purchases and acquisitions
12. Preparedness related to actions to protect

- (a) Self and family
- (b) Property

13. Preparedness related to helping behavior

- (a) Others known to self and family
- (b) Strangers

14. Sheltering behavior
15. Evacuation behavior
16. Panic behavior

Other changes, not explicitly mentioned above but subsumable as forms of "institutionalized" behavior change might include:

- * Religious activity
 - (a) Church attendance
 - (b) Prayer
 - (c) Ministering to victims

Now for the purposes of our search, "behavior" is defined as:

- (1) Reports of actual actions on the part of some respondents (regardless of the validity of such action claims).
- (2) Reports, by researchers, of actual observation of actions.

III. SOME ATTITUDINAL DIMENSIONS

Let some of the salient attitude changes to consider be identified. To repeat, the "changes" from normalcy-to-crisis by definition also point to those attitudinal states which are relevant as descriptors of "normalcy" since this is the state from which changes occur, in which changes are "anchored."

1. Perceptions of likelihood of hazards threat
2. Perceptions of risk, consequences should the hazard/threat materialize.
 - (a) Personal consequences perceptions
 - (b) Perceptions of consequences for others (including community, society, nation)
3. Acceptability of emergency management measures
 - (a) Coping measures by self and family
 - (b) Coping measures by others
 - (c) Coping measures that are institutionalized (agency, officials and the like)
4. Credibility of coping measures (will they work?) (can they work?)
5. Anxiety/fear/worry expressions
6. Expectations that others will help
7. Expressions of willingness to help others
8. Intentions to participate (volunteer, become trained, etc.)
9. Credibility of information sources
 - (a) Officials/agencies
 - (b) Media, national
 - (c) Media, local
 - (d) Family, friends, neighbors, etc.
 - (e) Interest/pressure groups
 - (f) Employers
10. Perceptions of appropriate investments into emergency • management measures/risk management measures and systems
11. Optimism-pessimism
12. Sense of efficacy (as perceived capacity to influence the course of events)
 - (a) Self and family
 - (b) Friends and neighbors
 - (c) Agencies and organizations
 - (d) Government - local, county, state, federal

APPENDIX B

The Crisis Response Conclusion
Retrieval Form

1. Author(s):

2. Title of Document:

3. Publishing Institution:

4. Publication Date: _____

5. Suggested Source or Location: _____

Call Number: _____

6. Name: _____

Date Completed: _____

7. General Category:

AD-A140 078

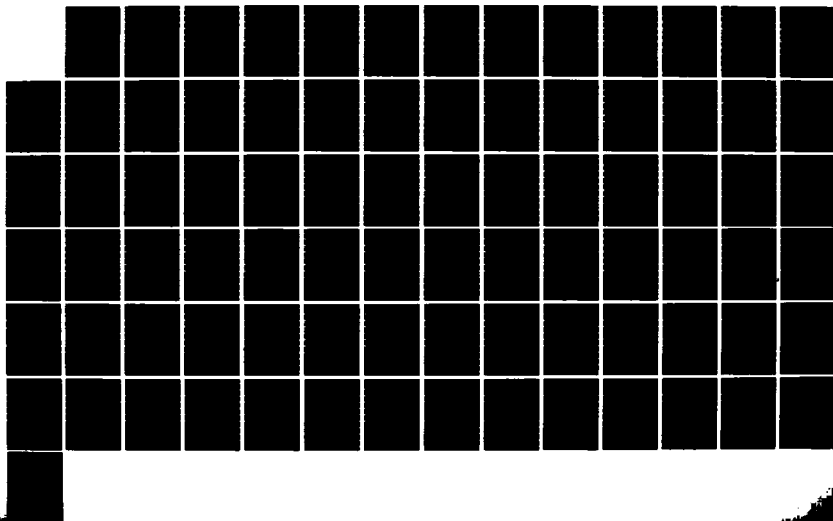
BEHAVIOR AND ATTITUDES UNDER CRISIS CONDITIONS:
SELECTED ISSUES AND FINDINGS(U) PITTSBURGH UNIV PA UNIV
CENTER FOR SOCIAL AND URBAN RESEARCH G O ROGERS ET AL.
FEB 84 EMM-C-0736

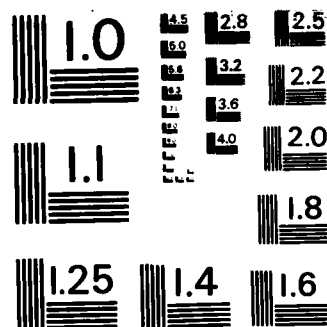
3/3

UNCLASSIFIED

F/G 5/10

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Crisis/Non-Crisis Document
Problematic Document (availability)

Date:

Problem:

Action Taken:

Signed: _____

Document Obtained: (date) _____
From:

8. Methodological Description:

9. Conceptual/Theoretical Framework:

10. Other Comments Relevant for Context:

CONCLUSION PAGE
(use one for each)

Ref. No. _____

Page _____ of _____

11. Descriptors:

12. Conclusion(s):

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

CODE BOOK
FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
	V1		1-5	5		Document reference number
	V2		6-8	3		Conclusion ID number
	V3		9-11	3		Total number of conclusions in document
	V4		12-14	3		Number of lines per conclusion (not coded)
	V5		15-18	4		Publication date
	V6		19-20	2		University of Pittsburgh Location of Document (01) Pitt (Univ. of Pgh. Library System - unspecified) (02) Hillman (Hillman Library) (03) WPIC (Western Psychiatric Institute & Clinic Library) (04) DRC (Disaster Research Center, Columbus, OH) (05) UCSUR (Center files) (06) NEH (Personal copy of Jiri Nehnevajsa) (07) COL (Univ. of Colorado - Disaster Center) (08) AUT (Available from authors or publishing institutions only) (09) Langley (10) Carnegie Public Library (11) ECON (Economics Library) (12) GSPIA (Public Affairs Library) (13) NTIS (National Technical Information Service) (14) Microfilm Inc. (Dissertations) (96) Other (99) No Answer
	V7		21	1		Does this document have a methodological description? (Question 8 - Search Form) (1) Yes (0) No
	V8		22	1		Does this document have a conceptual/theoretical framework? (Question 9 - Search Form) (1) Yes (0) No

CODE BOOK
FEHA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
	V9		23	1		Are there other comments relevant for context? (Question 10 - Search Form) (1) Yes (0) No
	V10		24-25	2		General Category I & II
	V11		26-27	2		(01) Disaster (02) Civil Defense (03) Stress (04) Coping Behavior (05) Attitudes and Behavior (06) Attitude Change (99) No Answer
	V12		28-29	2		Disaster Type I, II, III, IV, V
	V13		30-31	2		(01) Air Pollution (02) Animal Disease Epidemics (03) Assassinations (04) Avalanches (05) Aviation Accidents (06) Biological Warfare (07) Blackout (08) Bombing (09) Bridge Collapse/Damage (10) Building/Construction Collapse (11) Chemical Warfare (12) Conventional War (13) Crime (14) Crop Failure (15) Cyclone (16) Dam Failure/Damage (17) Disease Epidemic (Human) (18) Displacement of Persons (19) Drought (20) Earthquake (21) Energy Crisis/Shortfall (22) Explosion (23) Famine (24) Fire/Firestorm (25)
	V14		32-33	2		
	V15		34-35	2		
	V16		36-37	2		

CODE BOOK

FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
						V12-V16 (Continued) Disaster Type
						(26) Flash Flood
						(27) Flood
						(28) Food Poisoning
						(29) General
						(30) Hail
						(31) Highway Accident
						(32) Hostaging
						(33) Hurricane
						(34) Industrial Accident
						(35) Landslide
						(36) Mining Accident/Disaster
						(37) Nuclear (Power Plant) Accident
						(38) Nuclear Attack/War
						(39) Oil Spill
						(40) Pest Epidemic
						(41) Railroad Accident
						(42) Riot
						(43) Shipping Accident
						(44) Snow/Ice Storm
						(45) Subway Accident
						(46) Terrorism
						(47) Tornado
						(48) Tunnel Accident
						(49) Typhoon
						(50) Toxic Fumes/Spillages
						(51) Toxic Waste Leakages
						(52) Tsunami
						(53) Volcanic Activity
						(55) Water Pollution/Toxicity
						(56) Water Shortage
						(70) Natural Disaster Crises - A composite of the following natural disaster sub-types.
						(71) Land mass crises - such as:
						(a) Earthquakes
						(b) Landslides
						(c) Volcanos
						(d) Tsunami

CODE BOOK

FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
						V12-V16 (Continued) Disaster Type
						(72) Weather crises - such as: (a) Hurricanes (b) Cyclones (c) Typhoons (e) Snow and Ice Storms (f) Hail Storms (g) Tornados
						(73) Surface activity - such as: (a) Floods (b) Flash floods (c) Avalanche (d) Fire and Fire Storms
						(74) Climate induced crises - such as: (a) Water Shortage (b) Drought (c) Crop Failure (d) Famine
						(75) Sociopolitical disruptions - a composite of the following crises.
						(76) War - such as: (a) Bombing (b) Nuclear war (c) Biological war (d) Chemical war (e) Conventional war
						(77) Sociological crises - such as: (a) Assassinations (b) Crime (c) Displacement of persons (d) Hostaging (e) Riots (f) Terrorism

CODE 600K

FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
						V12-V16 (Continued) Disaster Type
						(78) Technological crises - A composite of the following crises.
						(79) Large scale technological system such as:
						(a) Nuclear (power plant) accident
						(b) Blackout
						(c) Dam failure
						(80) Structural failure - such as:
						(a) Bridge collapse/damage
						(b) Building construction collapse
						(81) Low level, delayed effect crises - such as:
						(a) Air pollution
						(b) Water pollution
						(c) Energy crisis/short fall
						(82) Chemical hazards
						(a) Toxic fumes, spillages
						(b) Toxic waste leakage
						(c) Oil spills
						(83) Discrete accidents - A composite of the following accidents.
						(84) Transportation accidents - such as:
						(a) Aviation accident
						(b) Highway accident
						(c) Railroad accident
						(d) Shipping accident
						(e) Subway accident
						(f) Tunnel accident
						(85) Industrial accidents - such as:
						(a) Mining accident/disaster
						(b) Explosion
						(86) Epidemic and disease - A composite of the following health related items.
						(a) Animal disease/epidemic
						(b) Human disease/epidemic
						(c) Pest epidemic
						(d) Food poisoning
						(99) No Answer

CODE BOOK

FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
	V17		38-39	2		Unit of Analysis I, II, III, IV
	V18		40-41	2		(01) Individuals
	V19		42-43	2		(02) Family
	V20		44-45	2		(03) Small group
						(04) Community
						(05) County
						(06) Rural
						(07) Town
						(08) City
						(09) Urban
						(10) Metropolitan
						(11) Region
						(12) State
						(13) National
						(14) Not available
	V21		46-47	2		Region of United States I, II, III, IV, V, VI
	V22		48-49	2		(01) New England States
	V23		50-51	2		(02) Middle Atlantic States
	V24		52-53	2		(03) East North Central
	V25		54-55	2		(04) West North Central
	V26		56-57	2		(05) South Atlantic States
						(06) East South Central
						(07) West South Central
						(08) Mountain
						(09) Pacific
						(10) Canada
						(11) Non-Contiguous
						(14) Not available
						Population Characteristics
	V27		58	1		No
	V28		59	1		Yes
	V29		60	1		(1) Male
	V30		61	1		(1) Female
	V31		62	1		(1) Child (under 12)
	V32		63	1		(1) Teen (12-18)
	V33		64	1		(1) Adult (19-30)
	V34		65	1		(1) Mid-age (31-64)
	V35		66	1		(1) Elderly (over 65)
	V36		67	1		(1) White
	V37		68	1		(1) Black
	V38		69	1		(1) Hispanic
	V39		70	1		(1) Oriental
	V40		71	1		(1) Low Income (Less than \$10,000/yr.)
						(1) Mid Income (\$10,000 - \$30,000/yr.)
						(1) High Income (Over \$30,000/yr.)

CODE BOOK
FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
	V41		72	1		Attitude, Behavior, Intention No Yes (0) (1) Attitude
	V42		73	1		(0) (1) Behavior
	V43		74	1		(0) (1) Intention
	V44		75	1		Disaster Phase Normalcy (1) Yes (0) No
	V45		76	1		Normalcy Sub-Phase (1) No recognition of hazard (2) Recognition of hazard with no plan (3) Recognition of hazard and informal prepared (4) Recognition of hazard and formal plan in place - organizational (9) No Answer
	V46		77	1		Expectant (1) Yes (0) No
	V47		78	1		Expectant Sub-Phase (1) Low threat (2) Medium threat (3) High threat (9) No Answer
	V48		79	1		Surge (1) Yes (0) No

CODE BOOK
FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
	V49		80-81	2		Surge Sub-Phase I, II, III, IV, V
	V50		82-83	2		(01) Mild Signal
	V51		84-85	2		(02) Alert
	V52		86-87	2		(03) Warning
	V53		88-89	2		(04) Evacuate
						(05) Newspaper
						(06) Television
						(07) Radio
						(08) EBS
						(09) Warning System
						(10) Personal
						(11) Local government
						(12) National government
						(13) Warning credibility
						(14) Minutes - Onset
						(15) Hours - Onset
						(16) Days - Onset
						(17) Weeks - Onset
						(18) Indefinite Onset
						(95) Wild Card
						(99) No Answer
	V54		90	1		Event
						(1) Yes
						(0) No
	V55		91	1		Event Sub-Phase
						(1) Minutes - Duration
						(2) Hours - Duration
						(3) Days - Duration
						(4) Weeks - Duration
						(5) Reported
						(9) No Answer
	V56		92	1		Non-Event
						(1) Yes
						(0) No

CODE BOOK

FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
	V57		93-94	2		Non-Event Sub-Phase (Undetermined)
	V58		95	1		Aftermath (1) Yes (0) No
	V59		96-97	2		Aftermath Sub-Phase (Undetermined)
	V60		98	1		Robustness Empirical Base Assessment E-0 E-1 E-2 E-3 Not Apparent (0) (1) (2) (3) (9)
	V61		99	1		Conceptual-Theoretical Base CT-0 CT-1 CT-2 CT-3 CT-4 Not Apparent (0) (1) (2) (3) (4) (9)
	V62		100	1		Abstraction from Data A-1 A-2 Not Apparent (1) (2) (9)
	V63		101	1		Strength S-1 S-2 S-3 S-4 S-5 Not Apparent (1) (2) (3) (4) (5) (9)
	V64		102	1		Data Usage Q-1 Q-2 Q-3 Q-4 Not Apparent (1) (2) (3) (4) (9)
	V65		103-105	3		DESCRIPTORS
	V66		106-108	3		001 Acceptance
	V67		109-111	3		002 Adaptation
	V68		112-114	3		003 Adjustment
	V69		115-117	3		004 Alcohol Use
	V70		118-120	3		005 Altruism
	V71		121-123	3		006 Amnesia
	V72		124-126	3		007 Anger

CODE BOOK

FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
	V73		127-129	3		DESCRIPTORS (Continued) V65-V79
	V74		130-132	3		008 Angst
	V75		133-135	3		009 Antagonism
	V76		136-138	3		010 Anticipation
	V77		139-141	3		011 Anxiety
	V78		142-144	3		012 Apathy
	V79		145-147	3		013 Apprehension
						014 Arson
						015 Assertive
						016 Assistance
						017 Authority
						018 Awareness
						019 Bravery
						020 Burial
						021 Care Giving
						022 Church (Attendance)
						023 Civil Disturbance
						024 Class (Antagonism)
						025 Clothing
						026 Cohesiveness
						027 Communication
						028 Compliance
						029 Concern
						030 Confidence
						031 Confirmation
						032 Conflict
						033 Conformity
						034 Confusion
						035 Congestion (Traffic)
						036 Consumption
						037 Controversy
						038 Convergence
						039 Cooperation
						040 Coordination
						041 Coping
						042 Crime
						043 Custom
						044 Death
						045 Decision Making
						046 Decisive

code book

FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
DESCRIPTORS (Continued) V65-V79						
						047 Defiance
						048 Demolition
						049 Dependence
						050 Depression
						051 Destruction
						052 Deviance
						053 Disaster Subculture
						054 Disbelief
						055 Disease
						056 Disorientation
						057 Distraction
						058 Distress
						059 Drug Use
						060 Economic
						061 Efficiency (Effective)
						062 Emergency
						063 Emergency Medical Care
						064 Emergent Group
						065 Encouragement
						066 Evacuation
						067 Excitement
						068 Exhilaration
						069 Expectation
						070 Experience
						071 Fear
						072 Fighting
						073 Financial
						074 Flight
						075 Forgetful
						076 Giving
						077 Government
						078 Government Expenditure
						079 Greed
						080 Grief
						081 Guarding
						082 Guilt
						083 Habit
						084 Hallucination
						085 Handicapped

CODE BOOK

FEMA CRISIS/NOH-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
<u>DESCRIPTORS (Continued) V65-V79</u>						
						086 Health
						087 Helping
						088 Helpless
						089 Heroism
						090 Hoarding
						091 Hospital Use
						092 Hostility
						093 Hysteria
						094 Illusion
						095 Immorality
						096 Impulsive
						097 Initiative
						098 Indifference
						099 Injury
						100 Insurance
						101 Interaction
						102 Invigoration
						103 Irritability
						104 Isolation
						105 Juridical
						106 Leadership
						107 Legal
						108 Legislative
						109 Looting
						110 Loyalty
						111 Media Usage
						112 Misconception
						113 Morale
						114 Motivation
						115 Mourning
						116 Myth
						117 Neurosis
						118 Normative
						119 Obligation
						120 Optimism
						121 Organizing
						122 Panic
						123 Participation
						124 Phobia

CODE BOOK
FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
DESCRIPTORS (Continued) V65-V79						
						125 Planning
						126 Political
						127 Prayer
						128 Preparation
						129 Psychosis
						130 Purchasing
						131 Racial Antagonism
						132 Recovery
						133 Regret
						134 Regulation
						135 Rejection
						136 Relief
						137 Religious
						138 Reluctance
						139 Remorse
						140 Rescue
						141 Resentment
						142 Resignation
						143 Restoration
						144 Revitalization
						145 Risk
						146 Routine
						147 Rumor
						148 Saving
						149 Search
						150 Selfish
						151 Self-sufficiency
						152 Separation
						153 Sexual Behavior
						154 Sharing
						155 Shelter
						156 Shock
						157 Skepticism
						158 Smoking
						159 Sorrow
						160 Stability
						161 Storing
						162 Superstition
						163 Surprise

CODE 800K
FEMA CRISIS/NON-CRISIS

ATTRIBUTE NAME	ABBREVIATION	TYPE	COLUMN NO.	LENGTH	KEY	DESCRIPTION
<u>DESCRIPTORS (Continued) V65-V79</u>						
						164 Survival
						165 Suspicion
						166 Sympathy
						167 Terror
						168 Therapeutic Community
						169 Therapy
						170 Threat
						171 Transportation Use
						172 Trauma
						173 Unity
						174 Vandalism
						175 Vigilance
						176 Violence
						177 Volunteering
						178 Waiting
						179 Warning
						180 Withdrawal
						181 Worry
						(995) Wild Card
						(999) No Answer

APPENDIX C
FEMA CRISIS RESPONSE CONCLUSION RETRIEVAL SYSTEM
USER'S MANUAL

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I. INTRODUCTION

The FEMA crisis response conclusion retrieval system can be used to search a database of conclusions derived from documents that deal with the subject of how people respond to crisis situations.

This command driven system operates in a fashion which is similar to many of the document retrieval systems used by librarians and information scientists. The principal command is the FIND command, which is used to select a subset of conclusions from the database. The complement of a set can be formed by using the NOT command. Two or more sets can be combined to create new sets by using the AND and OR commands. By using all of these commands together the user can isolate one or more sets of conclusions which may be of particular interest to a question at hand. If the user is unfamiliar with the use of these boolean operators, it is advised that he or she consult a text on the use of information retrieval systems.

The contents of a selection set can be viewed at the terminal by using the TYPE command. A permanent copy of a selection set can be created by issuing the PRINT command.

A HELP command can be used to obtain help interactively from the system. The LIST command can be used to obtain a list of the data fields which can be searched or to obtain a history of the search results so far.

The CLEAR command restores the system to its initial state. The DONE command allows the user to exit from the system.

II. PROGRAM EXECUTION

First, log in to the University of Pittsburgh'S DEC-10 computer (System A) using the following commands:

```
.TTY SYS A  
.LOGIN
```

The university computer will issue the following response:

```
JOB 137 PITT DEC-1099/A 701A.11 TTY64  Thur 6-Oct-83 1544
```

P,Pn:

You should at this point enter your project,programmer number, which identifies your computer account. The computer then asks for your password.

Password:

Enter your password, noting that it does not print on your terminal for reasons of security.

Next, identify your terminal to the computer (e.g. TTY TYPE VT100, TTY TYPE LA36, or TTY TYPE H19); or issue the following commands if you are not using one of these types of terminal.

.TTY LC
.TTY WIDTH 80

Then issue the following commands, which will place you into the search system.

.PATH/LIB:[133604,243521]
.MOUNT/WE D230
.RUN CRISIS

If all has gone well, you will get the message:

Welcome the FEMA Crisis Response Conclusion Retrieval System
For help type HELP

III. COMMAND SUMMARY

Commands are given to the system in the form of single lines having a maximum length of 128 characters. A command line consists of a keyword followed by one or more arguments. Both keywords and arguments may be abbreviated. Upper/lower case differences are ignored by the system. Either spaces or commas can be used as argument delimiters in most commands. Commas must be used, however, to delimit search term arguments in the FIND command.

If a command keyword is not recognized by the system, an attempt is made to interpret the line as a FIND command. The following is a list of valid system commands:

FIND

Search database for values listed in specified field
Usage: FIND fieldspec= value1, value2, value3 etc.

AND

Combine specified conclusion sets with AND logic

Usage: AND SETn, SETm, etc.

OR

Combine specified conclusion sets with OR logic (union)

Usage: OR SETn, SETm, etc.

NOT

Find inverse of specified conclusion set

Usage: NOT SETn

CLEAR

Discard previous search sets, begin new sequence at SET1

Usage: CLEAR

TYPE

Display a conclusion set at the terminal

Usage: TYPE SETn

PRINT

Print full conclusion set at line printer

Usage: PRINT SETn

HELP

Give user information about a command

Usage: HELP or HELP commandname

LIST

List searchable fields or results of previous searches

Usage: LIST FIELDS or LIST SETS

DONE

Exit system

Usage: DONE

IV. NOTES ON COMMAND USAGE**(a) The FIND command**

The find command is used to create a subset of the entire data base using criteria expressed as a string of arguments following the keyword FIND. The first argument following the FIND keyword should be the word ALL or one of the following two letter field identifiers.

GC = Conclusion General Category

DT = Disaster Type

PH = Disaster Phase

DE = Descriptors

AB = Attitude, Behavior, Intention

The FIND keyword may optionally be omitted, but a valid field identifier must be present. An optional equal sign (=) may follow the field identifier. The word ALL indicates that all conclusions in the database are to be selected. Otherwise, the command should be completed with a list of arguments specifying the general categories, disaster types, disaster phases, or descriptors (as appropriate) to be sought. A list of valid search terms may be found in the appendix to this manual.

Search term arguments MUST be separated by commas, and single arguments may contain more than one word. Arguments may be abbreviated and may optionally be enclosed in quotation marks. The following commands are equivalent:

```
find de=grief, fear
f de grief, fear
de grief, fear
fi de 'grief', 'fear'
```

Upon receiving a FIND command, the system searches the database of conclusions, looking for any conclusions which match one or more of the search terms. Thus if FIND DE=fear,anger is the command line, then the system will look for all conclusions which have been coded with the descriptor fear, or the descriptor anger, or both.

The system attempts to make the best match possible for the search criteria specified. If at least one valid search term is found, a numbered SET is created and the system echos back to the user a list of the search terms which correspond to the arguments input and a count of the conclusions found which match the search criteria.

Search arguments may be abbreviated. If an argument matches more than one search term then all matching terms are used in the search. FL would retrieve both FLOOD and FLASH FLOOD, for instance. A warning is given if an argument is not recognized.

The following interchange illustrates the use of the FIND command.

```
cmd?>find gc=disaster
```

```
SET1: Conclusion General Category = Disaster
```

```
2107 Conclusions found in 194 Documents
```

```
cmd?>find dt fl
```

SET2: Disaster Type = Flash Flood, Flood

392 Conclusions found in 71 Documents

cmd?>find ph event

SET3: Disaster Phase = Event

878 Conclusions found in 146 Documents

cmd?>de ang,anx,distress,fear,grief,phob,sorr

SET4: Descriptors = Anger, Angst, Anxiety, Distress, Fear, Grief,
Phobia, Sorrow

494 Conclusions found in 125 Documents

cmd?>find de= regret,remor,traum,worry

SET5: Descriptors = Regret, Remorse, Trauma, Worry

98 Conclusions found in 54 Documents

Note that only one field may be searched at a time. Results of searches may be combined, however, through the use of the AND and the OR commands discussed below. The SET which has been created can be referenced by its set number in these subsequent commands.

(b) The AND command

When you wish to combine the results of previous searches using AND logic (forming the "intersection" in set notation), you should use the AND command. The keyword AND must appear first on the line, followed by two or more numbers which refer to previously defined sets. These numbers must be separated from each other and from the keyword by blanks, commas, or any other non-numeric string of characters. Example:

cmd?>and set2, set3, set4

SET6: SET2 AND SET3 AND SET4

23 Conclusions found in 11 Documents

cmd?>and 5 6

SET7: SET5 AND SET6

4 Conclusions found in 3 Documents

Set 6 contains all conclusions pertaining to disaster types flood or flash flood in the event phase and which pertain to any of the emotions specified in set 4. Note that the AND command helps the user to narrow down the scope of his search and thus form a conclusion set of a reasonable size in which each conclusion is guaranteed to contain at least one search term from each of the previously specified search criteria. Note also that if the scope is narrowed down too much, then no conclusions at all will be found.

(c) The OR command

The OR command, by contrast, can be used to broaden the scope of the search. Use the OR command to create new sets which are combinations of previous sets (forming the "union" in set notation). Example:

```
cmd?>or set4 set5
```

SET8: SET4 OR SET5

546 Conclusions found in 134 Documents

Set 8 contains all conclusions which pertain to any of the emotions listed under set 4 or set 5. Note that the size of set 8 is larger than either set 4 or set 5, but that the number of conclusions is not necessarily the sum of the number of conclusions found in the two previously selected sets. This is because some conclusions may be in both sets.

(d) The NOT command

The NOT command can be used when it is desired to omit a particular category of conclusions from the search results. Use the NOT command to form the complement of a previously formed set. This newly formed set may then be used in subsequent commands to select conclusions which match a complex search criteria. Example:

```
cmd?>find gc= disaster
```

SET1: Conclusion General Category = Disaster

2107 Conclusions found in 194 Documents

```
cmd?>f dt= cycl,drou,hail,hurric,snow,tornado,typh,weath,clim
```

SET2: Disaster Type = Cyclone, Drought, Hail, Hurricane,
Snow/Ice Storm, Tornado, Typhoon, Weather Crises,
Climate Induced Crises

363 Conclusions found in 62 Documents

cmd?>not set2

SET3: NOT SET2

2913 Conclusions found in 224 Documents

cmd?>and 1 3

SET4: SET1 AND SET3

1759 Conclusions found in 170 Documents

Note that set 4 contains all conclusions whose general category is disaster, but which are not weather related.

(e) The CLEAR command

When you have completed a particular line of inquiry, or wish to make a fresh start, you may use the CLEAR command to delete the results of previous selection set formation efforts. You are offered a chance to abort the CLEAR command to allow for recovery in case a command line beginning with an abbreviation of the word CLEAR has accidentally been entered. Examples:

cmd?>C

The CLEAR command deletes all previous selected sets.
Do you wish to proceed (y/n) ?>n
CLEAR aborted

cmd?>clear

The CLEAR command deletes all previous selected sets.
Do you wish to proceed (y/n) ?>y
All sets cleared

(f) The TYPE command

Use the type command to view information concerning a specified set of conclusions at your terminal. You may obtain the bibliographic citations of the documents from which these conclusions were obtained, or you may elect to view the text of selected conclusions.

Example:

cmd?>FIND DT NUCLEAR ATTACK

SET1: Disaster Type = Nuclear Attack/War

724 Conclusions found in 46 Documents

cmd?>FIND DE HYSTERIA, PANIC

SET2: Descriptors = Hysteria, Panic

121 Conclusions found in 61 Documents

cmd?>AND 1 2

SET3: SET1 AND SET2

14 Conclusions found in 9 Documents

cmd?>TYPE 3

Typing SET3

Do you wish to see a BIBLIOGRAPHY or conclusion TEXT?>BIB

ID# TR041 - 1 conclusion - number 1

Inkle, Fred C.

Kincaid, Harry V.

"Some Social Aspects of Wartime Evacuation of American Cities"

Columbia University, Bureau of Applied Social Research,

Division of Population Research

1954

ID# TL076 - 2 conclusions - numbers 2 to 3

Nehnevajsa, Jiri

"Civil Defense and Sociey"

Pgh., PA: University of Pittsburgh, Dept. of Sociology

July, 1964

ID# AS028 - 1 conclusion - number 4

Nehnevajsa, J.

"Home Basement Sharing: An Analysis and a Possible Approach to Planning."

University of Pittsburgh, University Center for Urban Research

September, 1976

ID# AS032 - 1 conclusion - number 5
 Survey Research Center (The University of Michigan)
 "The American Public and International Tensions: Data on
 Shelters." A Preliminary Report
 Survey Research Center P. 1-16
 The University of Michigan
 Ann Arbor, Michigan
 December 1961

ID# JS085 - 4 conclusions - numbers 6 to 9
 Brown, William M.
 "The Nuclear Crisis of 1979 Final Report"
 Defense Civil Preparedness Agency
 U.S. Department of Defense
 Washington, D.C.
 1976

ID# TR005 - 2 conclusions - numbers 10 to 11
 Thomas, John W.
 Studebaker, Diana P.
 Bradish, Mary.
 Banathy, Bela H.
 A Model For Education and Training For A Crisis-Expectant Period.
 (Final Report)
 Under contract EMW-C-0017
 San Francisco, CA: Far West Laboratory for Educational R & D.
 Oct, 1980

ID# AS086 - 1 conclusion - number 12
 Garrett, Ralph L.
 "Civil Defense and the Public
 An Overview of Public Attitude Studies."
 Research Report No. 17
 Washington, D.C.: Office of Civil Defense
 1971, May

ID# TR035 - 1 conclusion - number 13
 Rogers, George O.
 "Social Status and Perceived Risk: Some Social Processes and Risk
 Perception"
 Pgh; Pa: University of Pgh
 University Center for Social and Urban Research.
 1982

ID# PB035 - 1 conclusion - number 14
 Nehnevajsa, Jiri

"Issues of Civil Defense: Vintage 1978 - Summary Results of the 1978 National Survey"
 UCSUR: University of Pittsburgh, Pgh., Pa.
 Feb., 1979

END OF BIBLIOGRAPHY

cmd?>TYPE 3

Typing SET3

Do you wish to see a BIBLIOGRAPHY or conclusion TEXT?>TEXT

Do you wish to view ALL or SOME conclusions?>SOME

Please input list of conclusions to be typed:

>1,4-6

***** DOCUMENT TR041 *****

----- 1. CONCLUSION TR041(2) -----

Descriptors: Panic

Conclusion:

The reports from very large disasters of the past, however, fail to show any significant mass panic among the afflicted population.
 <Findings from Hiroshima, Nagasaki, Hamburg, and other large bombings of World War II indicate that no serious mass panic occurred at any time./12/

p. 16

/12 U.S. Strategic Bombing Survey (Washington: Government Printing Office, 1946-47), passim; John Hershey, 'Hiroshima' (New York: Alfred A. Knopf, 1946); Takashi Nagai, 'We of Nagasaki' (New York: Duell, Sloan and Pearce, 1951); Hamburg Police President, "(Secret) Report by the Police President of Hamburg on the Heavy Air Raids on Hamburg in July/August 1943," Translated by Great Britain, Home Office, Civil Defense Department, 1946. (Mimeographed.)/

***** DOCUMENT AS028 *****

----- 4. CONCLUSION AS028(24) -----

Descriptors: Expectation, Communication, Death, Survival, Confirmation,

Panic, Acceptance, Regulation, Assertive, Compliance,
Cooperation, Shelter

Conclusion:

<In the city of Colorado Springs, over 94 per cent of the relevant residents reported that they would take in "as many people as possible" should this be a matter of life and death; in the Colorado Springs area, over 84 per cent of the respondents agreed to the same proposition. In other words, even the "packing factor" is not altogether limited by "hosting" number-preferences so that the planner, in dire need for additional spaces in particular subareas of each community, can have a good deal of assurance that many families would, in fact, accept "packing" rather than "hosting" as determinants of numbers of people in their basements.>

***** DOCUMENT AS032 *****

----- 5. CONCLUSION AS032(12) -----

Descriptors: Shelter, Threat, Panic, Confusion, Expectation, Reluctance, Rejection, Acceptance, Skepticism, Destruction, Demolition, Death, Survival, Optimism, Experience

Conclusion:

<Another dimension of the threat is to ask people to picture the local situation (admittedly a game-playing guess) in the event of a nuclear attack on the U.S. The answers to this question may cast some light on the number who are skeptical of the value of shelters. One adult in four foresees complete annihilation, desolation and destruction! Eighteen per cent see heavy destruction and ruin with some survivors facing severe radiation hazards. Another fifteen per cent see widespread damage but a significant corps of survivors with somewhat better prospects than those in the previous category of surviving immediate post-attack hazards. All of these tend to see local situations as worse than any non-nuclear attack mankind has experienced; they total 59 per cent of the total population of the U.S.

Only 11 per cent see no local danger from the nuclear weapon, though many of them forecast panic and confusion. Only about 1 in 10 are unwilling or unable to make any estimate of local conditions, though quite a few answered in terms of several possibilities. Such cases were categorized into a median category among their expected conditions.>

P. 4-5

***** DOCUMENT JS085 *****

----- 6. CONCLUSION JS085(2) -----

Descriptors: Evacuation, Panic, Media Usage, Planning, Preparation, Hoarding, Authority, Government, Consumption, Recovery, Coordination, Shelter, Survival, Conflict, Confusion

Conclusion:

<First day of near panic. Spontaneous evacuation of about 10% of urban population. CD is now daily front page news and of first priority in all large cities. Inadequacy of prior preparations has become apparent everywhere. Front page editorials castigate inadequacy of federal and state policies. Federal position of food, evacuation, shelter, rationing, host-area responsibilities, and recovery preparations is confused, obscure, or non-existent. Industrial and commercial CD teams begin functioning effectively but are not coordinated. Shortages of food, gasoline, survival supplies, and pharmaceuticals induce hoarding. Queues form daily for food and gasoline. Pros and cons of CRP are debated daily, but preparations continue, just in case.>

(g) The PRINT command

Use the PRINT command to create a disk file containing the entire text of all conclusions in a specified set. Alternatively, a slightly shortened form with less detail, or a document bibliography can be obtained through this command. The user is asked to specify a six letter name of this disk file, and the default extension .LPT is supplied by the system to the final product.

Example:

cmd?>PRINT 3

Name Print File >NUKELO

SHORT, LONG, or BIBLIOGRAPHY format? >LONG

SET3 will be printed in LONG format on NUKEL0.LPT

cmd?>PRINT 3

Name Print File >NUKESH

SHORT, LONG, or BIBLIOGRAPHY format? >SHORT

SET3 will be printed in SHORT format on NUKESH.LPT

cmd?>PRINT 3

Name Print File >NUKEBI

SHORT, LONG, or BIBLIOGRAPHY format? >BIB

SET3 will be printed in BIBLIOGRAPHY format on NUKEBI.LPT

Be sure to give each print file a unique name. Note that the disk files are not created immediately, rather, separate batch jobs are run at a later time for each print command issued. You must therefore wait until those jobs have run before you can issue a monitor level print command to obtain a printed copy of the conclusion text or bibliography.

(h) The HELP command

Any time you are in doubt about how to use the system, you may issue a HELP command. The word HELP by itself entered as a command gives you a list of the valid system commands. By entering HELP followed by the name of one of those commands (e.g. cmd?>HELP AND) you can obtain help with that specific command.

(i) The LIST command

The LIST command can be used to obtain a list of the valid field identifiers which may be used in FIND commands. To obtain this list, issue the command LIST FIELDS.

Alternately, the LIST command can be used to review the results of previous system use. In this case use the format LIST SETS. Examples:

cmd?>list fields

GC	Conclusion General Category
DT	Disaster Type
PH	Disaster Phase
DE	Descriptors
AB	Attitude, Behavior, Intention

cmd?>list sets

SET1: Conclusion General Category = Disaster

2107 Conclusions found in 194 Documents

SET2: Disaster Type = Cyclone, Drought, Hail, Hurricane,
Snow/Ice Storm, Tornado, Typhoon, Weather Crises,
Climate Induced Crises

363 Conclusions found in 62 Documents

SET3: NOT SET2

2913 Conclusions found in 224 Documents

SET4: SET1 AND SET3

1759 Conclusions found in 170 Documents

(j) The DONE command

Use the DONE command to exit the FEMA system and return to monitor level.

To allow recovery in case an abbreviation of DONE is accidentally entered at the beginning of a command line, the system asks you to verify your intent.

cmd?>d

Do you wish to exit the system (y/n) ?>n
DONE command aborted

If you do exit the system, a number of messages appear which are related to any print commands you may have issued. The batch jobs to generate disk files are submitted at this time. You are cautioned not to touch the keyboard, because doing so may interfere with the submission of one or more of these jobs.

cmd?>DONE

Do you wish to exit the system (y/n) ?>YES

PLEASE DO NOT TOUCH KEYBOARD UNTIL PROCESSING HAS STOPPED

.OPRSTK NUKLO

::: END OF JOB AFTER 8 CARDS / SEQUENCE NUMBER IS 9175 :::

EXIT

.OPRSTK NUKESH

;;; END OF JOB AFTER 8 CARDS / SEQUENCE NUMBER IS 9177 ;;;

EXIT

.OPRSTK NUKEBI

;;; END OF JOB AFTER 8 CARDS / SEQUENCE NUMBER IS 9178 ;;;

EXIT

.Leaving Crisis Response Retrieval System

.EXIT

Once you are at monitor level you may issue queue commands to follow the progress of these batch jobs, and may eventually rename or print any LPT files generated.

The search system creates a pointer file for each set you create during searching. These files have the extension .DMV and result from the System 1022 DBSAVE command. They will be named SET1.DMV, SET2.DMV, etc.

The search system also creates and deletes a temporary file (SETS.TMP). If the user issues a control-C during system execution, this file may be left in the user's directory.

Other files created by this system include BATCH.MIC, and files with the extensions HIS, DMV, CTL, and LPT for each print job. Any of the above files may be deleted once their use has been served.

GLOSSARY

- ACCEPTANCE:** Receiving and taking what is offered, including accepting information pertaining to the threat of a crisis.
- ADAPTATION:** Conforming behavior and attitudes to coincide with certain conditions. Adjusting to a situation to minimize risk to life, health, property, or environment. Inappropriate responses being maladaptive and no response being nonadaptive. See adjustment, coping.
- ADJUSTMENT:** Altering, adapting, or reconciling patterns of behavior to meet with external requirements. Adjusting or adapting to crisis expectancy and protective measures. See coping, adaptation.
- ALCOHOL USE; DRUG USE; SEXUAL BEHAVIOR; SMOKING:** Changes in these behaviors are perceived as indicative of stress levels in relation to crisis.
- ALTRUISM:** An unselfish concern for the welfare of others. Helping during the crisis phases. See volunteering, assistance, helping.
- AMNESIA:** Involves partial or complete loss of memory.
- ANGER:** Strong feelings of displeasure that are aroused because of a sense of wrong. See hostility, irritability, antagonism.
- ANGST:** A feeling of despair, depression, or gloom. See anxiety, neurosis.
- ANTAGONISM:** Hostility provoked through actions or words. Can be a feeling or attitude towards someone or something. See hostility, anger.
- ANTICIPATION:** Foresee the possibility of an event occurring. Expectation of a disaster or crisis. Includes the public's response in anticipation of the event. See expectation, waiting.
- ANXIETY:** A feeling of distress or uneasiness. See apprehension, worry.

APATHY:	Exhibiting a lack of concern. An attitude and accompanying behavior indicating a passivity in regards to crisis. Inability to be motivated to act. No evidence of disaster planning or preparedness. See indifference.
APPREHENSION:	Suspicious fear of the future, or the expectation of trouble. See anxiety, worry.
ARSON:	Burning or setting a fire with malicious intent. See crime, civil disturbance.
ASSERTIVE:	Possessing confidence, behaving in assured manner by taking an affirmative or positive stand. See initiative.
ASSISTANCE:	Act of assisting, helping, or supporting during a crisis. Also refers to government assistance. See helping.
AUTHORITY:	Being in control and having the power to command or act. Authority figures are crucial in the crisis situation. The public seeks information and guidance in response to threat.
AWARENESS:	Being cognizant of an event or situation. Comprehension or recognition of a threat or a crisis.
BRAVERY:	Possessing or exhibiting courage. See heroism.
BURIAL:	Putting into the ground and covering with earth. Traditionally used in reference to bodies but is also found relative to storing nuclear wastes and to bomb shelters.
CARE-GIVING:	The act of helping or caring for others. See helping, volunteering.
CHURCH (ATTENDANCE):	Religious behavior that can arise during crisis phases.
CIVIL DISTURBANCE:	Hostile confrontations, riots, protests that are unruly and turbulent. Conflict within the social order. See disaster types: crime, riot. See class antagonism, racial antagonism.

CLASS ANTAGONISM:	Antagonism between socio-economic classes. Cited in terms of home basement sharing preferences, and the attitudes and behavior of different classes in response to crisis. See civil disturbance.
COHESIVENESS:	Working together, solidifying. See unity.
COMMUNICATION:	Refers to the dissemination of information to the public during any of the crisis phases. Can include mild signals, alerts, informal and formal warnings, newspaper reports, radio and television broadcasts, and personal communications.
COMPLIANCE:	Yielding or conforming with something. To accept or agree. See acceptance, conformity.
CONCERN:	Interested or caring about someone or something.
CONFIDENCE:	Full trust and belief in the reliability of a person, agency, or thing.
CONFIRMATION:	Corroborating information, verifying. Part of the process in that the public seeks confirmation of warning messages.
CONFLICT:	Meeting of opposing forces, controversy or disagreement which can provoke hostility.
CONFORMITY:	The act of reaching an agreement or a state of being in a form constant with something else. See compliance, adaptation.
CONFUSION:	State of perplexity, uncertainty. Arises in response to the threat of a crisis in terms of what actions to take, what sources are credible. Indicates a lack of certainty. See disorientation.
CONGESTION:	Overburdened or filled to excess. Especially in reference to hospital and traffic congestion during a crisis.
CONSUMPTION:	The act of consuming, expending, or depleting. See alcohol use, drug use, and smoking.

CONTROVERSY:	Dispute over an issue. See conflict.
CONVERGENCE:	A concentration or merging. Usually of people at the scene of a disaster.
COOPERATION:	The act of working together for a common purpose or goal, implying agreement on the goal. See compliance.
COORDINATION:	An organized arrangement or orchestrated plan of action. See organizing, planning.
COPING:	To adjust or contend with crisis situations. Developing coping mechanisms to handle emotional and physical stress of a crisis. See adaptation and adjustment.
CRIME:	Actions which are legally prohibited and are injurious to the public or in violation of specific mores of behavior. Can be used in reference to the aftermath of a disaster. See crisis event: crime. See vandalism, looting.
CUSTOM:	Usual way of acting in a situation. Something that is familiar or habitual. See routine.
DEATH:	To cease living. The most serious risk the public must contend with in specific crisis situations.
DECISION-MAKING:	Process involving the determination of an effective course of action often based on an appraisal of the threatening situation, or an estimation of the probability of occurrence. It is frequently referred to in conjunction with evacuation.
DECISIVE:	Having the power to analyze and determine what actions need to be taken. The ability to react quickly.
DEFIANCE:	Actively opposing or rejecting. Denying threats of a crisis, rejecting authority, or resisting evacuation plans. See rejection.
DEMOLITION:	Similar to destruction. Possible result of a disaster impact. Also can be planned destruction or ruin.

- DEPENDENCE:** To rely on someone else for support or help. The state of being conditional or contingent on something. See helpless.
- DEPRESSION:** Feelings of dejection or downheartedness. See apathy, withdrawal, and indifference.
- DESTRUCTION:** Damages as a result of a disaster agent. Risks of destruction and costs of damages are noted.
- DEVIANCE:** Aberrant or illegal behavior that departs from the norm. Any digression or change in routine.
- DISASTER SUBCULTURE:** Develops in areas (communities) that have experience with particular disasters such as seasonal floods or tornadoes. Composed of groups of individuals that have developed an appropriate coping behavior well in advance of the disaster impact. Responses to threat perception and ameliorative actions are included. The community builds its protective capabilities to meet demands of the crisis based on past experience. Extent of organization and preparedness are affected by whether or not the crisis is routine, the amount of destruction expected, and the number of possible casualties.
- DISBELIEF:** Refusal to believe or to accept as true. Denial. Often characteristic of persons who perceive their situation as safe or predictable in order to preclude worry. See acceptance.
- DISEASE:** An abnormal function of the body which can be attributed to a number of things: heredity, infection, diet, environment, illness, sickness, or ailment. Can be a crisis event as well as a reaction to crisis, or the result of a disaster.
- DISORIENTATION:** Confusion as a result of the loss of norms, customs, and other guides for behavior that were previously used under normalcy conditions. Inability to judge or adapt.
- DISTRACTION:** Diverting attention.
- DISTRESS:** Acute physical or mental suffering. Stress or pain.

- ECONOMIC:** Pertains to income and wealth. Monetary affects of crisis. Also used in reference to socioeconomic classes. See financial.
- EFFICIENCY (EFFECTIVE):** Competency in performance evidenced through responsiveness to the threat of a crisis and the crisis event. Individual's ability to cope with crisis. See coping.
- EMERGENCY:** Sudden occurrence in need of immediate action.
- EMERGENCY MEDICAL CARE:** Medical assistance during an emergency situation. Quick response to an illness or injury. Referred to in terms of disaster preparedness.
- EMERGENT GROUP:** Group of individuals, informally organized, that arises in response to threat of a crisis. Results from individuals finding themselves in a similar threatening situation. See convergence.
- ENCOURAGEMENT:** To provide inspiration with courage, spirit, confidence, or reassurance.
- EVACUATION:** Coping behavior under the threat of a crisis which involves leaving a threatened area in search of safety. Particular attention is paid to the individual's attitude and behavior towards evacuation in general and government and organizations' evacuation plans. The willingness/unwillingness to evacuate is discussed as well as the incidence of spontaneous evacuation. Similar to relocation. See shelter.
- EXCITEMENT:** State or condition involving the arousal of emotions or feelings.
- EXPECTATION:** The perception of the likelihood of a crisis event occurring. Subsequent actions taken in conjunction with the expectation of a crisis include evacuation, government intervention, and other preparedness measures. See anticipation.
- EXPERIENCE:** Having encountered previously. Refers to past experiences with disaster or crisis events. Important as to the effect such an experience will

have on attitudes and behavior in relation to present and future threats.

- FEAR:** Emotional response aroused by an impending threat of pain or danger or illusion of such. Frightened, afraid.
- FIGHTING:** Battling or combating a force in a vigorous manner.
- FINANCIAL:** Money concerns, i.e., loss of money, civil defense costs, recovery costs, public and governmental expenditures, personal savings, insurance, and the costs to the taxpayers. See economic, insurance, saving.
- FLIGHT:** Leaving or taking off. In disaster situations to leave a threatened area. Sometimes referred to as panic flight. See evacuation.
- FORGETFUL:** Cease or fail to remember, lack of recall. Under the threat of a crisis this can be intentional--inability to handle the situation. Stress can trigger forgetfulness for long periods of time.
- GIVING:** To present voluntarily, bestow or place in someone's care.
- GOVERNMENT:** Matters relating to the governing of the state, e.g., government's role in prevention, crisis management, and civil defense.
- GOVERNMENT EXPENDITURE:** Government funding of disaster preparedness and civil defense.
- GREED:** An excessive or inordinate desire for something. Avarice.
- GRIEF:** Bereavement, emotional response to injury or death, or loss of property. Anything that is lost and regretted.
- GUARDING:** Keeping safe from danger or threats, protecting, watching over, defending.

GUILT:	A feeling of responsibility or remorse for some real or imagined offense.
HABIT:	Customary practice. See routine, custom.
HALLUCINATION:	Sensory experiences that are nonexistent outside of the mind. Nightmares, illusions, delusions. See neurosis, psychosis.
HANDICAPPED:	To be at a disadvantage due to some disability which limits actions to be taken under the threat of a crisis.
HEALTH:	Refers to the condition of the mind and the body. Particularly how health is affected in a threatening environment. Health risks role in decision-making is examined.
HELPING:	To render assistance, give aid. Help during a crisis expectancy period or in the aftermath. See care-giving, assistance.
HELPLESS:	Unable to help oneself, to be dependent, powerless or incapacitated in some way. See dependence, handicapped.
HEROISM:	Courageous or noble conduct. See bravery.
HOARDING:	Involves the accumulation of supplies for self-preservation in the future. To keep hidden or guarded.
HOSPITAL USE:	The hospital as a place for treatment of victims during the crisis.
HOSTILITY:	To oppose through antagonistic attitude or behavior. See anger, antagonism, or violence.
HYSTERIA:	Uncontrollable outbursts of emotion or fear, often characterized by irrationality, laughter or weeping.
ILLUSION:	Perception that is not based on reality, a fallacy. Can be ideas or beliefs an individual invents in order to cope with the threat of a crisis.
IMMORALITY:	Deviation from existing norms of moral behavior. Moral breakdown.

IMPULSIVE:	An emotional response that causes immediate actions to be taken without appraising the situation or the alternatives. Used in reference to decision-making under the threat of a crisis.
INITIATIVE:	Taking the initial step, originating an action. See assertive.
INDIFFERENCE:	Showing no concern, preference or partiality. Unconcerned about threat or possible repercussions. See apathy.
INJURY:	Harm done or sustained because of a disaster. The probability of injury is important in assessing the magnitude of a crisis event.
INSURANCE:	Insuring property, life or the lives of family members against loss or harm in consideration of payment proportional to the risk involved. Attitudes and behavior towards purchasing insurance is discussed, especially flood and earthquake insurance.
INTERACTION:	Activities or transactions between two or more parties usually to solicit or verify information. See communication.
INVIGORATION:	Filled with life, energy, vitality. See revitalization, exhilaration.
IRRITABILITY:	Excited to a point of impatience. See anger, antagonism.
ISOLATION:	To be detached or alone. See separation.
JURIDICAL:	Pertains to the administration of justice, and also used in reference to judgment and judging. See legal and legislative.
LEADERSHIP:	The ability to lead, influence, or guide. To show the way, to indicate what course of action to take.
LEGAL:	Issues pertaining to the law and legislation. See juridical.

LEGISLATIVE:	The making and enacting of laws, relevant to crisis. Such as safety control, legislation, reconstruction, and recovery plans.
LOOTING:	A dishonest act involving the carrying away or taking of goods. Behavior that is frequently feared in terms of evacuating one's home.
LOYALTY:	The state or quality of being loyal or faithful to commitments or obligations.
MEDIA USAGE:	The use of mass communications, specifically radio, tv, and newspapers to convey, solicit, and verify information. The public's attitudes towards the role of the media in crisis situations are analyzed in terms of credibility, effectiveness, and the ability to motivate individuals to act. See communication.
MISCONCEPTION:	Incorrect representation of a situation. Distorted picture of an event. Can be an error in the interpretation of the communication of the threat.
MORALE:	The moral or mental condition of a person or group with respect to cheerfulness, confidence.
MOTIVATION:	An inducement or incentive to act. Can be seen in terms of confirming the threat of a crisis, preparing, and evacuating.
MOURNING:	To feel or express sorrow or grief for the dead or for anything regretted.
MYTH:	A belief whose truth is accepted uncritically. Some disaster myths include beliefs about panic flight, looting, post-impact crime rates, etc.
NEUROSIS:	Nervous disorder which can surface under the threat of a crisis. See anxiety and depression.
NORMATIVE:	Behavior that is guided by norms or standards that have become a set pattern.
OBLIGATION:	A sense of being bound to do certain things. This arises out of a feeling of duty to certain customs or laws.

OPTIMISM:	The tendency to look on the more favorable side of events of happenings.
ORGANIZING:	Systematizing and coordinating into a whole entity. See preparation, planning, and coordination.
PANIC:	Acute fear that can lead to hypervigilance. Often occurs when danger is imminent, there has been little or no warning, and victims believe escape routes are closing, or victims experience extreme isolation. Discussed in terms of a reaction to the threat of a crisis.
PARTICIPATION:	To take part, share. Often in assisting in disaster related activities. See volunteering.
PHOBIA:	An obsessive or irrational fear.
PLANNING:	Creating a course of action or a procedure. Such as civil defense preparedness. Preparing for the disaster impact. See preparation, organizing.
POLITICAL:	Related to politics, political parties, and the state and government.
PRAYER:	Religious observance seen as coping behavior under the threat of a crisis.
PREPARATION:	A state of readiness, making necessary arrangements for a future event. Refers to disaster preparedness or any actions taken subsequent to a crisis. See planning, coordination.
PSYCHOSIS:	Severe mental disorder or disease affecting the personality. Sometimes emerging during or after crisis and stress situations.
PURCHASING:	Buying goods and spending money in preparation for the threat of a crisis. See consumption.
RACIAL ANTAGONISM:	Antagonism over racial issues. See civil disturbance.
RECOVERY:	Resuming or reclaiming, in terms of previous

lifestyles. Having survived a crisis. Function of aftermath.

REGRET:	Feeling of sorrow or remorse. To think of something or someone with a sense of loss.
REGULATION:	The rule or order prescribed by an authority in order to establish control. Government regulations concerning safety and legislation relevant to crisis and disaster planning.
REJECTION:	Refusal, denial. Used in terms of possible rejection of the threat of a crisis and unwillingness to evacuate. Inability or unwillingness to acknowledge reality. Acknowledging danger would pose a physical inconvenience or emotional stress. Used as a protective mechanism to avoid situation.
RELIEF:	The easing of discomfort, distress, or anxiety. Diminish or mitigate pain. Usually follows a crisis event or the lessening of the threat.
RELIGIOUS:	Attitudes and behavior that are relative to faith, religion, and beliefs that surface during a crisis. See church attendance and prayer.
RELUCTANCE:	Attitudes and behavior of unwillingness or disinclination.
REMORSE:	Deep regret.
RESCUE:	To free or deliver from a state of confinement, isolation or threatening situation. Used in reference to search and rescue. See relief, restoration, and recovery.
RESENTMENT:	Indicating indignation or displeasure. Caused by feelings of insult or injury.
RESIGNATION:	An unresisting attitude, acquiescence.
RESTORATION:	Restoring something to its original condition. Returning to the way things were prior to the crisis, attempting to resume a former way of life. Can be in terms of restoring the physical environment or restoring private lives.

REVITALIZATION:	To restore or give new life. See invigoration, exhilaration.
RISK:	Exposure to the chance of injury or loss; a hazard or a dangerous chance. Probability of certain circumstances occurring and the possible effects in terms of life, health, people, institutions, and environment.
ROUTINE:	Regular course or procedure, something that is customary--evidenced in the normalcy phase. See custom.
RUMOR:	A story or statement in general circulation without confirmation or certainty as to the facts. Often seen in reference to warning messages and personal communications.
SAVING:	To preserve or maintain. Saving lives, going back to evacuated area to save material goods, financial or personal savings.
SEARCH:	To look for or examine. Often used in reference to search and rescue operations. Can also be used in the context of searching for confirmation of warning messages.
SELFISH:	Devotion only to oneself and one's own interests.
SELF-SUFFICIENCY:	Able to provide for one's needs without external assistance.
SEPARATION:	To be kept apart by some barrier, disassociated, or removed. See isolation.
SHARING:	To give or receive equally. See participation.
SHELTER:	Something which is used to protect. Oftentimes is used in reference to bomb shelters, fallout shelters, or home basements. See evacuation.
SHOCK:	Sudden or violent disturbance.
SKEPTICISM:	Having a doubtful attitude or temper. To be wary.

SORROW:	Feelings of sadness caused by loss, affliction, or disappointment. See grief, regret, mourning.
STABILITY:	Continuing without change, reliable, permanent.
STORING:	Putting in stock, to accumulate reserves under the threat of a crisis. See planning, preparation.
SUPERSTITION:	Irrational beliefs or folklore used to protect events--disaster.
SURPRISE:	To experience a sudden feeling of unexpected wonder following an unexpected discovery.
SURVIVAL:	To remain alive, continue to exist.
SUSPICION:	Distrust or suspicion. Often in regards to credibility of sources.
SYMPATHY:	Ability to share the feelings of another.
TERROR:	Intense fear caused by the presence of threat, danger, or evil.
THERAPEUTIC COMMUNITY:	Informal social structure capable of handling the demands that a crisis situation makes on the community. Offering help and emotional support for victims of disasters.
THERAPY:	Treatment of psychological problems that surface during a crisis.
THREAT:	Indication of probable trouble. Likelihood of a crisis.
TRANSPORTATION USE:	Means of transporting victims or potential victims under the threat of a crisis. Methods of evacuation.
TRAUMA:	Startling experience that produces a lasting effect mentally or physically.
UNITY:	The forming of one unit from separate entities. Individuals working together under the threat of a crisis. See convergence.

VANDALISM:	Destruction of property, also a threat which is felt in which the public has to decide to evacuate or not. See destruction, looting, crime.
VIGILANCE:	Being perceptive of threat cues, alert, able to detect danger. Not suffering from cognitive constriction, capable of search and appraisal.
VIOLENCE:	Violent acts or proceedings involving an intense force of some kind. Used to describe disaster impact or actions of persons affected by a crisis. See hostility, anger, antagonism.
VOLUNTEERING:	To offer services willingly without obligation. Volunteering to help victims of disasters, or volunteering for civil defense programs. See altruism.
WAITING:	To hold oneself ready for an arrival. See expectation, anticipation.
WARNING:	Notification of the existence of danger and suggestions of actions to be taken to mitigate the impact. Effectiveness of warnings is studied in addition to the public's response and evidence of confirmation.
WITHDRAWAL:	To draw back or away. To retract. Also used in reference to evacuation.
WORRY:	Feeling uneasy or anxious, to suffer over disturbing thoughts. See anxiety, apprehension.

APPENDIX D

CRCRS Documents

The University Center for Social and Urban Research (UCSUR) pursuant to the fulfillment of FEMA contract no. EMW-R-0736, created a data archive of conclusions of attitudes and behaviors (public, not organizational) during sequential phases of crisis events or the threat thereof. In this study crisis events are natural or man-made disasters which strike at the community level and have the potential to activate emergency management agencies. This computerized conclusion archive is known as the Crisis Response Conclusion Retrieval System (CRCRS). The source of these various conclusions is published studies from a variety of disaster research centers such as the Disaster Research Center at Ohio State University, the Natural Hazards Research Center at the University of Colorado, and the Battelle Human Affairs Research Center in Seattle, Washington. Other documents were procured from the Federal Emergency Management Agency, the University Center for Social and Urban Research, and academic journals from the behavioral sciences. This appendix briefly outlines the operating principles and procedures by which this unique archive was created.

The FEMA request for UCSUR dictated a review and evaluation of extant knowledge of attitudes and behaviors in crisis situations. The broad focus of this task required the establishment of an equally wide-ranging universe of documents for representative sampling. The first step in the creation of this bibliographic universe was the writing of criteria for inclusion and the priorities for reading.

UCSUR has undertaken numerous empirical studies of relevant topics in the last two decades. Pursuant to these tasks an extensive on-site library of research and theoretical studies on topics relevant to FEMA has accumulated. The relevance and ready availability of these documents provided a worthwhile "jumping-off" point. These documents and all the references cited within them comprised the initial bibliography of approximately one thousand entries. Realizing the selective biases of previous UCSUR projects, the bibliographic universe was expanded with: library searches of the University of Pittsburgh's holdings and other national computerized systems; contact to other research organizations engaged in similar pursuits requesting annotated bibliographies of their publications, and similar requests from FEMA, through which National Technical Information Service and Defense Technical Information Center holdings were listed, reviewed, and selectively obtained. All these document references were added to the bibliographic universe. Thereafter any document actually searched for conclusions had its references added as well. The completed bibliography contained approximately fifty-four hundred entries.

An original estimate "of several hundred documents" had ballooned to

a bibliography whose magnitude precluded indepth search of every document. Accordingly a set of priorities was established. The bibliography was classified in its entirety according to these guidelines:

1. Each reference was color-coded according to the major topic(s) of the document. These categories included: natural or man-made disasters, civil defense issues, stress theory and coping behaviors, attitude and behavioral change, and miscellaneous topics. This classification allowed a reduction in reading size from 5400 to 1409.
2. Each reference was categorized again according to its publication date. Three classes of dates were established: 1971 to 1982, 1961 to 1971, and 1961 or before. The classes are inclusive. A cross-tabulation of publication dates with subject areas provided a visual breakdown of the proportions of relevant documents be searched for conclusions (see Table 1). Highest priority was awarded to the most current documents.
3. Documents whose concern was crisis events occurring in the United States, Canada, or U.S. territories were our single geographic focus.
4. Given our concern with individual behaviors and attitudes, documents whose major concern was the study of formal organizations or agency policies in crises were excluded unless the conclusions utilized data concerning behavior and attitudes of individuals.

Table 1

CRRP Bibliography By Subject Area
and Publication Date

Subject	1971 to 1982	1961 to 1970	Thru 1969	Raw Total	Raw % Bib.
Disaster	541 (10.01)	227 (4.20)	128 (2.37)	896	16.44
Civil Defense	55 (1.01)	196 (3.62)	39 (.72)	290	5.37
Stress	39 (.72)	45 (.83)	36 (.66)	120	2.22
Attitude/ Behavior Change	38 (.70)	48 (.88)	25 (.46)	111	2.05
Other	1,934 (35.81)	1,451 (2.687)	606 (11.22)	3,991	73.90
Column Total	2,607	1,967	834		
Column % Bib.	48.27	36.42	15.44		5,400

Summing those cells of focus in the project yield 1417 documents which have topics germane to the CRRP. Of these, 641 were chosen for searches. Out of the 641, 253 documents yielded conclusions, 227 documents could not be procured, and 161 documents were felt to be inappropriate for conclusion abstraction.

FEMA CRISIS RESPONSE CONCLUSION RETRIEVAL SYSTEM

DOCUMENT LIST

1/14/1984

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BEHAVIOR AND ATTITUDES UNDER CRISIS CONDITIONS: SELECTED ISSUES AND FINDINGS

George Oliver Rogers and Jiri Nehnevajsa

Summary

Behavior and attitudes under crisis conditions provide the focus of this research. These attitudes and behaviors are juxtaposed to those associated with periods of relative normalcy in order to identify any changes in daily routine as crises emerge. Attitudes and behavior in the pre-crisis period, that is prior to impact, are the primary concerns. It is in this phase that emergency planning and preparedness can be most effective in guiding the public to avoid and protect potential consequences.

The emergency management concepts of crisis expectant and crisis surge proved useful, as identifiable periods of crisis. These phases appear arbitrary because different people in the affected area may experience different phases of crisis at the same time. For example, during the Three Mile Island incident, the Governor's advisory to preschool children and pregnant women began the crisis surge phase for these individuals. While others saw this advisory as another cue of crisis expectancy. Despite this conceptual fuzziness, the concepts show considerable utility because they demarcate changes in public responses. The patterned shift from routinized attitudes and behaviors of normalcy periods to the consolidation and maximization of resources and capabilities in the crisis expectant period is one example. Another is the use of these human and material resources in the crisis surge period as a means of protecting or avoiding potential harm.

The public seems to respond to crises in remarkably similar ways, and their aims parallel those of emergency preparedness officials: enhancing the survival chances by reducing harm, lessening property damage and minimizing loss of life. The public response to impending danger further reflects a strong commitment to protecting themselves, their loved ones and even those generalized others with whom they may become associated--a sentiment of enormous use to emergency officials.

While it can perhaps never be established whether it is real or a function of scientific pursuit, the public seems to exhibit a remarkable propensity to engage in structurally similar activities in response to crises. Beginning with a general response to crises in familiar ways, they tend to respond in terms of the routine. In this sense it is because some hazards are less familiar than others that emergency plans become helpful in guiding emergency response. If public memory was perfect and all hazards equally familiar, plans might not be needed. Because these conditions are not met and people tend to respond to hazards in relatively familiar ways, plans and particularly plans that are well understood become part of the context for normative response to crisis.

The second way in which people respond similarly to disasters consists of general information seeking, a characteristic of the crisis expectant period. As people become alerted to the potential for danger, they tend to seek additional information or specification of the hazard's etiology (when it will occur, how it will affect them, any clues of its imminence, and what to do to protect themselves from harm). Much of this information may be obtained from the environment via the human senses. For this reason off-the-shelf emergency preparedness materials may be best suited. This kind of material can provide information about the nature of the potential hazard, interpretation of any clues of impending hazard, guide (in outline form) possible adaptive responses to the crisis, and identify potential mechanisms for avoiding the hazard. These materials would contribute significantly to the emergency preparedness posture and take advantage of information seeking propensities. Advantage would also accrue from the fact that humans are sophisticated information processors with incredible ability to detect personal vulnerability and respond appropriately, if they are given the correct information and guidance. Finally, such off-the-shelf materials could serve to place an appropriate (though not total) responsibility for individual safety upon the individual. Like other safety devices, such as seat belts, protective eyewear, and smoke detectors, such materials could either be utilized or disregarded by the individual. The informed choice for (or against) protection would rest with the individual.

Another way people seek information concerning the potential for hazard spans the crisis surge and expectant periods. This is the confirmation of warning. It is a check of clues with public officials, family, friends, relatives, coworkers or neighbors, or by observing the environment. Confirmation activities occur within time constraints but serve particularly in the social network, to disseminate the warning message, unite primary groups (at least in terms of getting together on current and future activities), and mobilize resources and capabilities for response to the impending emergency. Preparedness measures can take advantage of these adaptive aspects by enhancing warning belief through clear, concise, and informative official warnings from credible sources. This maximizes potential response time. This is the way that effective, authoritative, verifiable and early warning takes advantage of probable information seeking and confirmation activity, thereby setting the stage for an effective public response in the crisis surge period.

Third, there seems to be a propensity to evacuate to avoid crises of nearly all kinds. While this could result from research reporting and scientific pursuit, it does make good sense. The relative costs, availability and ease of implementation make evacuation particularly attractive, while the overall effectiveness is left unchallenged for most hazards. This combination of characteristics makes evacuation a sensible response to hazard.

Finally, another way that people respond in similar ways to crises is the propensity to respond in groups; particularly families. This group response to emergency situations facilitates the emergency response posture by consolidating resources, both material and human, bringing an extant social role-structure and associated authority to the emergency response. The assessment of the situation, and of the aggregate capability and resources are the only remaining issues prior to response. Further if the risk is considered high, the capacity to deal with it is likely to be found via the principle of least resistance within the family and extended family. Responding in groups also tends to ease tension by placing each individual in the familiar social context of the family or group.

Because of these marked similarities in response to crises across a variety of hazards, an all hazards approach to emergency management seems to be quite realistic. An integrated emergency management system can rest on the foundation of these similarities, while adapting to special features of individual types of crisis. Such an approach takes advantage of existing similarities in response, while remaining flexible enough to accommodate existing differences adequately. While an allocation of resources to essential standby emergency capabilities is a near universal among societies, this allocation is not necessarily limitless. Hence, an all hazards approach to emergency management seems to utilize human, material and fiscal resources to develop and maintain emergency response systems most effectively. The all hazards approach is a credible, responsible, effective, enlightened approach to emergency management that rests on tangible empirical evidence. Caution should be exercised, however, to avoid overplanning, detailing all possible contingencies. People do not always require, nor do they want such detailed response plans. Efforts should be aimed at the fundamental responses to hazards and should highlight the nature of special circumstances that would alter this response set. Sufficient detail about the characteristics of each crisis can be provided without having to structure each response to these differing hazards. The key is flexible guidance that facilitates an informed public response to hazard.

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Behavior and Attitudes Under Crisis Conditions:
Selected Issues and Findings
George Oliver Rogers and Jiri Nehnevajsa
University Center for Social and Urban Research
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This research examines the nature and extent of changes in behavior and attitudes which are triggered by the actual and potential occurrence of crisis. Patterned behavior and attitudes, as manifest in daily routine and prevailing attitudes, are disrupted by conditions of crisis not only in response to hazard but in anticipation of potentially hazardous situations. These shifts reflect a human response to conditions of crisis that may be either adaptive or maladaptive. Adaptive behavior and attitude changes are those that help to minimize, or at least decrease, the threat or insult; if the threat cannot be minimized or decreased, and maladaptive attitude and behavior changes do not, even though they may be so intended.

Existing literature, as it pertains to public attitudes and behavior changes, does not, even though they may be so intended, provide an answer to the research questions. This examination seeks three lofty goals. First, the aim is to inventory the state of scientific information and knowledge concerning attitudes and behaviors in times of crisis, which necessarily compares such attitudes and behaviors to those associated with non-crisis conditions. This objective seeks an answer to the fundamental question: what do we know about behavior and attitudes in crises? And, conversely, what do we not know? Second, this research seeks a synthesis of information and knowledge in a conceptual framework whereby one can anticipate, beyond the scope of the empirical evidence, the nature and magnitude of such changes among the body politic. And finally, to identify policy implications as they pertain to emergency planning and preparedness.

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