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FACTORS AFFECTING THE RELATIONSHIP BETWEEN
THE RESEARCH SYSTEM AND RESEARCH USERS:
AN AMERICAN VIEW FOR AN ITALIAN AUDIENCE*

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What is the best configuration or relationship for disaster or mass emergency planning between the scientific research system and the administration system (or research users as they are called in the United States)?

This is a question that has been asked and answered in some way at the present time in perhaps two dozen countries around the world. The answer or the relationship that has been suggested, and in some cases actually institutionalized, varies somewhat from one nation to another. There are at least four reasons for this variation in the possible relationship between the research system and the administrative system.

They are:

- 1) differences in the social structures of different societies;
- 2) differences in what different countries include under disaster planning;
- 3) differences in whether an agent specific or a generic approach is taken to disaster planning; and
- 4) differences in the social science capability and disaster knowledge base in different societies.

Given these existing differences in different societies around the world, which we will briefly elaborate upon soon, it should not be surprising that there are different configurations or sets of relationships possible between the research systems of societies and their administrative systems. Differences, of course, can be overstated. Insofar as disaster or mass emergency planning is concerned there are many common elements in what exists between the social sciences research system and the administrative system of many societies. All see some close links; nonetheless, the social

structure differences suggests that there is probably no one model which can be universally applied or directly borrowed from another society for use in a given society.

Let us briefly consider how social structural differences between societies can affect both disaster studies and applications of research findings.

As an example, the United States and Japan are socially similar in many respects. They are both subject to many similar natural and technological disaster agents. They are both highly industrialized and urbanized countries. They both have a strong scientific base and a tradition of using research to solve practical problems. However, the U.S. and Japan are drastically different in their governmental-political structure -- Japan is a very centralized society; the U.S. is a very decentralized society. This affects fundamentally the meaningful social science disaster research questions which can be asked in the two countries, what kind of disaster planning can best be implemented, and what features of disaster planning can be usefully borrowed from one society for use in another.

In terms of the illustration just given: Italy and Japan, as another example, are quite similar in that both are highly vulnerable to many similar disaster agents (e.g. major earthquake), both are urbanized and industrialized societies, and both have centralized governmental systems. It follows that along some lines disaster research and disaster planning could be quite similar in both countries, and that both could borrow and learn from one another. Of course, there are also socio-cultural differences and for certain purposes these would be important in planning for and researching disasters.

To have effective and efficient disaster planning requires drawing from an adequate research base. We have tried to suggest that this link between planning and research might vary somewhat because of the social structural differences between societies.

We now turn to how differences in conceptions of disaster planning might influence the disaster research that is undertaken and the possibilities of the application of research findings.

The relationship between disaster research and emergency management has been viewed in different countries as involving various phases or stages. It is our understanding that in Italy you have divided the phases into Primary, Secondary, and Tertiary Systems. A similar, compatible scheme has been developed within the United States that involves four stages. Allow us to discuss these stages briefly and note some types of research that are appropriate for each stage.

First, there is the stage of MITIGATION. Mitigation refers to activities which actually eliminate or reduce the probability of the occurrence of a disaster. It also involves long-term activities which reduce the effects of unavoidable disasters. Research has contributed to the effectiveness of various measures to lessen the likelihood of disaster occurring. Generally, there are two types of measures that may be used, i.e., structural and non-structural. Structural measures for floods, for example, involve dam construction, stream channel and floodwall construction, and reforestation. With regard to earthquakes, improvement in building construction, is an example. These elements involve research in engineering, geology, hydrology,

physics and the natural sciences. In addition, there are nonstructural measures that can be taken with regard to mitigation. These measures involve legislation, management, and enforcement issues. For example, flood plain legislation and management that forbids building and development in flood prone areas represents this type of activity. The development of legislation about building codes and the enforcement of this legislation can mitigate the impact of earthquakes. In this instance research by social scientists can be very valuable in determining the effectiveness of these activities.

Second, there is the phase of PREPAREDNESS. Preparedness activities involve the actions of governments, organizations, and individuals in the development of plans to save lives and minimize disaster damage. Preparedness activities are necessary to the extent that mitigation measures have not or cannot prevent disasters. Preparedness measures also attempt to improve disaster response operations. Preparedness activities include the development of emergency operations plans, emergency exercises and training, evacuation planning, resource inventories, and warning systems. The contribution of social science research at this point is substantial. To give only one illustration, in the United States the effectiveness of the National Weather Services warning systems for severe storms, floods and hurricanes has been greatly improved, not just by modern technology, but also by the application of social science research findings on how people respond to cues for danger.

Third, there is the stage of RESPONSE. Response activities occur

immediately before, during, and directly after an emergency or disaster. Generally, they are designed to provide warning, population protection, and emergency assistance. They also seek to reduce the probability of secondary damage and to speed recovery operations. Specific tasks include public notification through the mass media, provision of shelter, search and rescue, emergency medical activities, and security and control measures. Once again, the research of social scientists has benefited by planning for these activities. For example, with respect to medical care, research has shown that the normal, insitutional system used for emergency medicine simply cannot handle effectively the mass casualty situation. Furthermore, the less seriously injured victims tend to be treated before the more seriously injured. Alterations in staffing, transportation, and triage for these medical problems are the obvious implications of these research findings for improved planning.

Finally, there is the stage of RECOVERY. By definition, recovery continues until all systems return to normal or better. Short-term recovery returns vital life-support systems to minimum operating standards. Long-term recovery may continue for a number of years. Activities are varied, and include: temporary housing; reconstruction, damage insurance; loans and grants, long-term medical care, health and safety education, counseling programs, and economic impact studies.

Obviously, all of the social sciences can produce research results that will aid in developing plans and procedures for recovery. As noted, economic impact studies are vary valuable. There has been important research, for example, done on the economic impact of the Friuli earthquake by Italian

researchers that has implications for other countries.

It is realized that these phases are interrelated. For example, recovery activities have implication for future mitigation procedures for other disasters. Reconstruction following disaster can incorporate both structural and nonstructural mitigation measures, for example, the utilization of new construction techniques combined with the development and enforcement of building codes to lessen the effect of future disasters. Currently, Professor Dynes, of the Disaster Research Center, is in Mexico City consulting with the Mexican government about the long-range recovery problems following the earthquake. Among the disaster planning aspects he will be discussing with them, will be the empirically-researched based suggestion that recovery measures must support and be consistent with future mitigation efforts.

A third way in which the disaster research and disaster planning might be influenced has to do with the position which is taken on whether -- both for research and planning purposes -- disasters are approached in generic or agent specific terms. That is, one position is that both research and planning are best when it is assured that there are common elements which cut across most, if not all, disaster agents. Thus, there is the view, for example, that there is little difference in how effective warnings should be issued -- it does not matter if the agent is a flood, a toxic chemical cloud, a volcanic eruption, or a massive fire. Research indicates that warnings to be effective must indicate personal danger, relative certainty of impact of danger, and probable occurrence in a short time. This approach contrasts with one which assumes that planning and research will have to vary depending on the specific disaster agent involved. Thus, an agent

specific approach assumes that studies and planning for chemical disasters, for instance, will differ markedly from those for flood disasters.

In the United States, there has been an interesting historical development on this matter. Social science researchers almost from the start of studies on disasters took the generic approach to disaster. Physical science researchers, disaster planners and operational personnel from emergency organizations tended to take a relatively agent specific approach. This made sense in terms of the physical sciences and engineering -- a researcher interested in physical aspects of earthquakes will obviously be interested in and study rather different phenomena than a researcher interested in the physical aspects of floods. But disaster planners and operational personnel in the U.S. slowly, and actually reluctantly, eventually swung around to a generic rather than agent specific approach especially with respect to emergency preparedness and emergency response management measures. Researchers point out that a generic approach is cost-effective (that is it saved money), that it avoids duplication of personnel and resources, and that it simplifies disaster-oriented training and educational efforts.

A partial consequence of the position taken by American disaster researchers was that about 5-6 years ago, the federal government established at the national level an organization called the Federal Emergency Management Agency (FEMA). This organization with overall responsibility for the federal or national involvement in disaster planning and response in American society, advocated and established as national policy a generic on what is called the integrated Emergency Management System approach to disasters. Thus, what had been resisted 10 years earlier has now become institutionalized

as national policy.

An integrated or generic approach has also been instituted in England and some other countries. While it would be incorrect to attribute the assumption of a generic approach to planning and response only or solely to disaster research, it is a fact that disaster research in some countries has been an influential factor.

This brings us to our fourth way in which disaster planning and response has been influenced, and that is the social science capability and disaster knowledge base that exists in a given country.

Twenty five years ago there was only the start of research in the disaster area. Thus, in only a few countries was it possible for researchers to contribute much to disaster planning and emergency management. However, there has been a tremendous increase in the last decade in the number of disaster studies, of disaster researchers, of countries where disaster research is undertaken, and of societies where disaster research and planning has been linked. This increase is uneven around the world, but there are now about 25 countries where disaster research is being undertaken.

In some countries, such as Japan and the United States, there is both quantity and quality in the research studies. In others, while the research production so far has been relatively moderate, the quality of the work has been particularly high. Italy is one such country about which this can be said. In less than 10 years the Italian disaster researchers have produced very good work which is recognized in the international disaster research scientific community. In fact, given where we are meeting

we should note that much of their first class work has been done by the social scientists in this area, the great majority of them associated with ISIG.

Good work has been and is being done in such diverse countries as Australia, Sweden, Canada, Belgium, and Great Britain. Significant research has recently been initiated in France, India, Greece, Mexico, China, and Yugoslavia.

Furthermore, all these researchers are slowly linking with one another. There is now a network of disaster researchers, an international disaster community. One positive outcome of this is that new researchers in the area can have the guidance and advice of other groups elsewhere. In fact, the computerization of library and data resources in the more advanced disaster research groups will make it increasingly easier for both researchers and planners to quickly learn about what is being done elsewhere.

However, for the time being we have to depend on conferences, such as this one, to learn about work elsewhere. So we will continue at this point to discuss the relationship between disaster research, finding, and planning, especially in the U.S. This is not necessarily a model of how anyone else should proceed, but simply a description of how one society has handled the problem of generating disaster studies and applying research findings.

We would like to briefly discuss how disaster research is funded in the United States and the nature of the relationship that exists between the researcher and the funding agency. While funding in the United States

is available for social science research from private sources, most of the research is funded by public or governmental agencies. There are two broad types of research relationships which we would like to call:

1) researcher-generated projects and 2) funding-agency-generated projects.

Allow us to discuss these two types by referencing the two current major studies of the Disaster Research Center.

Researcher-generated projects

For a number of years the Disaster Research Center has been interested in studying mass communication systems during disasters. Based upon some earlier work and a recent collaborative study with some Japanese researchers, we developed a proposal that designed a study of mass communication system's organizational structure and news gathering processes during disaster. Normal news operations of papers, radio and television would be compared to their emergency-time activities. The project was expected to take two years and would involve studying a minimum of eight different disasters. Its goal was to produce basic, pure research findings of an exploratory nature.

This project was submitted to the National Science Foundation for consideration for funding. The National Science Foundation is a governmental agency that is the largest source of scientific research funds in the United States, and it maintains a program for supporting social research on disasters and natural hazards. In the instance of this type of research, the research investigator takes the lead and the research design is driven by theory and scholarly concerns. The researcher structures the entire

effort. The funding agency awards the grants solely on the basis of the scientific merit of the proposed study as evaluated by professional peers and other researchers.

Funding agency-generated projects

The other major way in which disaster research is funded is through contracts that are initiated by the funding agency. Basically, a public or private agency will have topics that they would like to have studied. They will advertise this fact through a "Request for Proposal". They announce that they are interested in funding research into a specific topic. They direct the major thrust of the research project. Various organizations and individuals then submit specific proposals, research designs, and funding estimates for the cost of doing the research to the funding agency. These "bids" are evaluated by the funding agency, who award the contracts based upon the adequacy of the proposed studies for their interest and funding amounts.

Our second current major project at the Disaster Research Center illustrates this type of award. The Federal Emergency Management Agency is the national level organization that has responsibility for planning for and responding to the full range of natural and technological hazards in the United States. In addition to planning for events, as varied as floods, war and toxic spills at the national level, the Federal Emergency Management Agency also assists the various states and local communities in planning and response activities.

As such, they were interested in having a study undertaken of the activities and problems faced by local emergency-relevant organizations

during disaster. They submitted a "Request for Proposal" and awaited the bids.

The Disaster Research Center was interested in pursuing this research because it is consistent with our efforts over the past twenty years. We designed a five-year study that would examine the activities of local community emergency management offices, police, fire organizations, hospitals, and interorganizational relationships during the emergency period of disasters. Our proposals and estimated budget were submitted -- along with competing "bids" from other organizations -- to the Federal Emergency Management Agency who made the selection based primarily upon their agency needs and the adequacy of the proposed efforts to meet them.

The end product of these two different funding processes are different, though compatible. In the first instance the goal is to produce pure, theoretically-oriented research. In the second case the goal is to produce research that has an applied orientation. In the latter situation the researcher must consider and present the social policy implications of the study, along with recommendations for change. Of course, when doing the first kind of study the researcher also often considers the applied and policy implications of their basic findings. Similarly, the data gathered through the second approach also has theoretical relevance.

At first glance it might appear that the second strategy would have the highest value, or pay-off, for practitioners. In many ways this is true. By selecting the topic based upon planning and organizational needs, directing the research toward certain important questions, and focusing the effort upon applied needs, the value of the research product to the

funding agency might appear to be maximized. However, there is also value in the first strategy of having the researcher control the project, because the researcher is often able to bring a different creative and valuable perspective to the research problem that might not have been foreseen by the funding agency. For example, the National Weather Service approached social scientists and wanted research conducted into "why people do not pay attention to our warning messages of disaster". The researchers were able to first note that the practitioners were asking the wrong question. The appropriate question should have been: "Why do you not write warning messages in a form that results in people taking actions". In other words, the problem is not with the people or the citizens; instead it is with the agency and its warning system.

Finally, allow us to offer a few brief observations on the contributions of disaster research to emergency planning and policy in the United States and in general. As noted earlier, in the United States an "All Hazards Approach" or Comprehensive approach to planning is now being advocated by the federal government. Based upon research findings, social scientists in the Middle 1960's had recommended to the federal government that they move to a comprehensive or integrated-hazard approach to planning and response. They resisted, partly on the simple observation that floods were different from earthquakes, and both differed from toxic spills. It took almost ten years before the suggestions of the research community were integrated into planning. Therefore, one must not always expect quick results.

Furthermore, research has had a profound effect on the way in which planning is perceived in the United States. Previously, planning was viewed

as a product, in other words, the goal of the effort was often viewed as being a document, i.e., a "plan". Under the influence of disaster research, planners are now properly considering planning as a process. It is an ongoing process of planning, public education, citizen awareness and inter-organizational preparation.

In conclusion, let us note that perhaps the most important contribution of disaster research to planning and policy is in the area of "planning based upon reality, rather than myth". Decades of disaster research have described the actual behavior of individuals and groups during disaster. It has been found that many common, popular stereotypes of human behavior in disasters are wrong, in other words, they are myths. For example, people do not act irrationally or anti-socially. Panic and looting are relatively rare. Social chaos does not prevail. Unfortunately, planning is often based upon these and other mistaken notions about disaster behavior. If planning for disasters is going to be effective, it must be based upon what people will actually do during a disaster, not upon myth and misconceptions. In this regard the social science researchers offer a valuable service -- they deal in reality.