

## THE GENERAL TREND OF SOCIOBEHAVIORAL DISASTER STUDIES IN JAPAN

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*In this article we very briefly review the history of sociobehavioral disaster research in Japan which is mostly a post 1970 undertaking. Examples of recent major studies are given. While the work has been relatively limited so far, the future appears promising.*

In Japan, the sociobehavioral study of disasters has had a rather short history. We can not cite much work older than some publications produced in the 1960s. In the 1960s, only a few psychologists were interested in behavioral research on disaster phenomena. Kitao Abe of the Tokyo University of Foreign Studies and his colleagues were those psychologists who at that time engaged primarily in the studies of panic or abnormal human behavior in emergencies.

In 1972 there was a Japan-United States meeting on the sociobehavioral aspects of disasters supported by the National Science Foundation in America and the Japan Society For the Promotion of Science. The meeting was held at the Disaster Research Center, then located at the Ohio State University. Japanese participants at this meeting included Professor Abe, Ritsuo Akimoto and several behavioral scientists. At that time there were probably not more than ten sociobehavioral disaster researchers in all of Japan. The participants at the meeting included almost all the Japanese students of disaster and emergency behavior involved in the area prior to 1970.

However, this meeting was a turning point. It gradually led in Japan to a recognition by social scientists of the importance of the sociobehavioral study of disaster. Somewhat concurrent with that meeting in the United States, a few seismologists

in Japan were very publically stating that there was an increasing possibility of the occurrence of a major earthquake in the Tokai district in the central part of Japan. Mostly as a result of their admonitions, a national project to protect or mitigate against the anticipated Tokai Earthquake was initiated. As a result of the initiative of the national government, the prediction of and preparation for this anticipated earthquake has become an urgent problem for the Japanese nation. As part of this national effort, an assessment of the social impact of the earthquake warning was considered as one of the foci of public concern. Thus, sociobehavioral scientists were encouraged to apply themselves to the study of disaster, so that they could respond to inquiries such as "How to issue and transmit an earthquake warning to the public?" or "What will be the social effects of the warning?"

In 1977, a group of social psychologists and sociologists, headed by Keizo Okabe of the Institute of Journalism and Communication Studies at the University of Tokyo, initiated studies on the earthquake warning system and its possible impact on the society. At the onset of this work, this group carried out survey research into general attitude of the public in the Tokyo Metropolitan Area toward earthquake warnings (Okabe et al., 1979a). Then the Izuoshima Offshore Earthquake occurred in 1978. A few days later, the local government of the district issued a warning against an anticipated aftershock of the earthquake. This resulted, to some extent, in social confusion in the affected area. This event, called the "Aftershock Warning Panic," seemed to suggest a model of the process of the warning which might be involved in the Tokai Earthquake. A consequence was that members of the University of Tokyo group investigated the aftershock event intensively. The analysis of the transmission of the warning, and of the public response to it was reported by Shunji Mikami and Hirosuke Mizuno in detail (Mikami, Mizuno et al., 1978).

While the warning against the Tokai Earthquake has never been issued yet, a false warning in 1980 was given at Hiratsuka City. This event was considered to present another possible model of the warning which might be given about the Tokai Earthquake. Therefore, S. Mikami, Kenichi Ikeda, Yasumasa Yamamoto and Kakuko Miyata studied the process of the false warning and thoroughly examined the response patterns of the involved people (Mikami et al., 1982; Okabe and Mikami, 1983).

In addition to these studies, members of the group have sometimes studied the warning process in the case of other kinds of disaster agents other than earthquakes. For example, K. Ikeda, Yoshiaki Hashimoto and Makoto Nakada surveyed

people's responses to an evacuation order which was issued by the local government at the time of warehouse fire, at Obu City in 1980 (Ikeda et al., 1981; Ikeda, 1982). In 1982, a flood occurred at Nagasaki City and about three hundred people were killed in the disaster. In this case, communications within and between various social organizations seemed to be not very effective in protecting against the disaster. So Osamu Hiroi, S. Mikami, Y. Yamamoto, K. Ikeda and K. Miyata researched why the intra- and inter-organizational communications did not function effectively (Hiroi, Mikami et al., 1983). When the Nihonkai-chubu (Mid-Japan-Sea) Earthquake occurred in 1983, a hundred people were killed by a tsunami which impacted the coast of the district immediately after the earthquake occurrence. In this case, a warning against the tsunami was issued; however, it was not effective either. Thus K. Okabe, O. Hiroi and the other members of the University of Tokyo group studied the tsunami warning and examined the cause of its failure (K. Okabe et al. 1985). In the same year, a volcano in the small island named Miyakejima erupted suddenly, and all the people evacuated successfully following an evacuation order. Atsuro Tazaki, O. Hiroi, S. Mikami and others studied the evacuation behavior of the people and attempted to explain how the evacuation order was a success in this particular case (Tazaki et al., 1985a).

In addition to these studies, members of the group have sometimes carried out surveys on the attitude and preparedness of citizens for a major earthquake (Okabe et al., 1979b; 1980; Hiroi et al., 1981; Tazaki et al., 1985b). Some members of the group have also done experimental studies on psychological responses to earthquake warnings. They have used several kinds of TV film which were especially produced for the purpose of the experiment. This series of experiments were done by Hirohisa Suzuki, Koji Murata, K. Ikeda and others (Suzuki et al., 1980; 1985). Also, some members of the group have analyzed mass media news reporting in disasters (Mikami, 1984).

On the whole, the group of the Institute of Journalism and Communications Studies at the University of Tokyo have undertaken a broad range of studies, as illustrated above. All of these studies were outlined by K. Okabe in a special 1983 issue of the Japanese Annals of Social Psychology (Volume 24) on the subject of the social psychology of disaster (Okabe, 1983).

Concurrent with these studies, Professor Hirotada Hirose of the Tokyo Women's Christian University, has done panel survey studies of the local residents in the areas that are assumed to be most subject to the projected Tokai Earthquake. He has followed up this work with studies of disaster prevention planning

at the national and local level (Hirose and Ishizuka, 1983; Hirose, 1984). Also he studied the rehabilitation of the area affected by the 1977 eruption of Mt. Usu at Hokkaido (H. Hirose, 1979, 1981), and he has compared his results cross-culturally with those obtained by Ronald Perry in the United States regarding post-eruption recovery process in the area around Mt. Helens (Perry and Hirose, 1983).

While most of the foregoing studies have concentrated on the problems of warnings and communications in disasters, another major line of sociobehavioral disaster research has been focusing mostly on human behavior in emergency. As mentioned earlier, K. Abe and his colleagues have been studying panic behavior in emergencies and disasters since the 1960s. They undertook several studies on the flight behavior of people escaping from fires which occurred at Osaka and Sakata City (Abe, 1974; 1978). In 1974-75, a large part of the public in Kawasaki City became anxious about an earthquake, because a rumor predicted that a major earthquake would soon impact the city. At that time, Abe and his colleagues engaged in a study of the responses of people, looked at whether panic occurred, and examined how many persons in Kawasaki City believed that the rumor was true (Abe, 1976). Also, K. Abe, in cooperation with R. Akimoto, R. Kazama and members of the Institute of Future Technology, did a study on the Aftershock-warning Panic mentioned (Abe, Kazama et al., 1979; Akimoto, 1981). In their study, Abe and others concentrated on people's behavior in the perceived emergency, rather than on the process of the aftershock-warning. In addition, Abe has analyzed the behaviors of customers of a department store, and has looked at their evacuation behavior at a time of emergency (Abe, 1981). Furthermore, Abe, based on the foregoing studies, contributed an article on the "panic potential" of the people in emergency to the already mentioned special 1983 issue of Japanese Annals of Social Psychology (Abe, 1983).

Beside the groups already mentioned, Jyuji Misumi of Osaka University was the head of a group which has been studying human behavior in disaster as well. They have operated mostly out of a group dynamics background. They have primarily conducted experimental studies to find out what kind of decision making and leadership are most effective in getting people to evacuate in dangerous situations. Results of the studies have been presented one after another at the meetings of the Japanese Psychological Association or the Japanese Society of Social Psychology from 1981 through 1984.

Many papers reporting on the studies have been written by members of Professor Misumi's group in the same years. Building

on some of these studies, J. Misumi, Naoki Kugihara and Seiichi Sato have carried out an experimental study on flight behavior in a simulated panic situation, and have reported the results in their paper (Misumi, Kugihara and Sato, 1980). Misumi and Sato have reported their study on leadership behavior in emergencies in relation to followers (Misumi and Sato, 1982). Kugihara and Misumi recently wrote an article on the effect of leadership types on the evacuation behavior of followers (Kugihara and Misumi, 1984). Also Sato and Kugihara have reexamined Minitz's experimental study on panic behavior in 1951, and reported their experimental study on behavior in the simulated emergency (Sato and Kugihara, 1983). Toshio Sugiman has discussed a method of leadership in evacuation behavior (Sugiman, 1983).

Aside from these works by social psychologists, an important study was done by several economists. Yoshimasa Kurabayashi, Yoshio Matsuda and others of the Institute of Economics, Hitotsubashi University, analyzed through the application of econometrics the economic impacts caused by the 1923 Great Kanto Earthquake (Kurabayashi, 1983; Matsuda, 1983; Mochida, 1983).

Still another noteworthy work was done by some cultural anthropologists, led by Jiro Tanaka of Hirosaki University. They studied the patterns of personal behavior under stress caused by an earthquake. This was done from a viewpoint of cultural anthropologists which is somewhat different from that of social psychologists (Tanaka and Hayashi, 1984).

Thus, there has been an acceleration of various sociobehavioral disaster studies since the latter half of the 1970s. These studies were planned and performed by each research group separately from others. However, most of the groups thought that there was a necessity to organize and integrate the studies as a whole. Consequently, toward the end of the 1970s, sociobehavioral scientists who were undertaking disaster research began to meet together, in order to exchange information about their studies and to talk over urgent and important aspects of their work. The chairman of the meeting was Kenichi Inada of the Institute of Economics of Osaka University. Participants in the meetings were Chikio Hayashi of the Institute of Statistical Mathematics, J. Misumi, K. Abe, K. Okabe, Y. Kurabayashi, Y. Matsuda, H. Hirose, O. Hiroi, S. Mikami, K. Matsumura, R. Kazama and others. The group which met was called the Society for the Sociobehavioral study of Disaster. It held regular sessions every other month at the Institute of Statistical Mathematics. When the second Japan-United States meeting on disaster study of a social nature, supported by the U.S. National Science

Foundation, was held in Tokyo in 1980, the Japanese participants at the meeting were fifteen sociobehavioral scientists from a dozen different institutions who were regular members of the Society.

Overall, however, disaster studies in Japan have been carried out primarily by specialists in the various fields of the natural sciences. In 1963, several hundreds of these specialists organized themselves into the Group for the Comprehensive Studies on Natural Disaster. The government provided subsidies for the scientific studies. The group has several divisions according to specialty, such as the study on earthquake, on flood, or on volcanic eruption, etc. For a long time there was no division of any kind of sociobehavioral study on disaster. However, just as the development of computer science depends on coordinating studies of both hardware and software, disaster mitigation technology can only be effective with a proper balance of disaster research in the natural sciences and in the social and behavioral sciences. As this was increasingly recognized by disaster researchers, the group of natural scientists showed an interest in strengthening sociobehavioral disaster study, and in promoting cooperative research involving both natural and sociobehavioral sciences.

Consequently, the Society for the Sociobehavioral Study of Disaster was merged with the Group for the Comprehensive Studies on Natural Disaster, and in 1981, was authorized as a division within the Group.

Since then, some of the sociobehavioral disaster studies have been authorized as a project study by the Group and have been subsidized by the Government. One of these studies is the study on the prediction and control of evacuation behavior in emergency, carried out by J. Misumi and his group, which was finished in 1983 (Misumi et al., 1984). The second study is the research on the process and effects of disaster warning; this work was headed by K. Okabe and finished in 1984 (Okabe et al., 1984). A third project study involves looking at the methodology of disaster education for school children. This is headed by C. Hayashi, and the work is still underway.

In addition to these studies, some important works in the sphere of "software" have been undertaken by several natural scientists in recent years. For example, Itsuki Nakabayashi and his colleagues at the Center for Urban Studies, Tokyo Metropolitan University, have carried out research studies on civil defense organizations and the public reactions to disasters (Nakabayashi et al., 1983). Yutake Ohta and others of the Department of Architectural Engineering, Hokkaido University, have systematically analyzed human immediate responses to

the earthquakes which occurred off the coast of Miyagi Prefecture in 1978, and at the offshore of Urawa City in Hokkaido in 1982 (Ohta, 1983). Masanori Izumi and his colleagues in the Department of Architecture at Tohoku University, undertook a study on the problems of citizens caused by the damage of life line systems; they applied the method of system dynamics (Izumi et al., 1984). Also, Yasuo Shimazu of the Department of Earthquake Science at Nagoya University has, through simulations, studied people's evacuation behavior in disaster (Shimazu and Hiramatsu, 1980). In addition, Yosaku Hasegawa and Hiroaki Yoshi of the Institute of Future Technology, using the method of computer simulation, have analyzed the relation between earthquake warning systems and social responses to the warnings (Hasegawa and Yoshii, 1982; 1983).

These new methodological techniques in disaster research, introduced by natural scientists, seem to be attractive to sociobehavioral scientists. So there has been a growing recent tendency towards the interdisciplinary study of disaster by sociobehavioral scientists and natural scientists.

As noted above, studies on natural disaster have been undertaken primarily by natural or physical scientists in the past, and the absolute majority of the current studies are still performed by them. However, the recent development of sociobehavioral disaster research is fairly remarkable, although its history is rather short. Of course there are some theoretical methodological problems which have to be overcome in order to better develop the research. That is:

1. Most of the sociobehavioral disaster studies were initiated in the past by psychologists or social psychologists. Some of the more recent studies were prompted by natural or physical scientists. As a result, there is a relative lack of studies from the aspect of socioeconomics or other fields of social science.

2. Some of the studies are concentrating on human behavior in disaster. They are using the method of psychological experiment as mentioned earlier. In these studies, the variables of human behavior can be strictly analyzed. However, there usually is a difficult problem on how to close the gap between the artificial experimental situation and the real disaster situation. On the other hand, survey research into human behavior in disasters usually deals with real life problem situations. But these survey studies have a general tendency to be descriptive in nature. Some of these studies are devoid of much theoretical relevance.

3. Fundamentally, disaster studies will be significant when they can contribute, directly or indirectly, to mitigation of disasters. In this respect, some of the sociobehavioral disaster

studies in Japan are significant. But some studies seem to be devoid of practical relevance and are not so significant. It appears there is a necessity to ask the question: knowledge for what?

Even though there are such theoretical and methodological problems as these, the sociobehavioral studies of disaster have developed in recent years. The number of researchers and the production of papers have increased significantly. Whenever a disaster of any kind occurs, a study is often done. Thus, the general trend in the last decade suggests that disaster research seems to be a promising area, although the study as a whole is still in its infancy.

When the editors of *Mass Emergencies and Disasters* generously offered us an opportunity to edit a special issue on Japanese disaster research, we were very pleased to be able to introduce the work in Japan to an international audience. Up to this day, almost all of the reports of the sociobehavioral disaster studies in our country have been written in Japanese. So it has been difficult for researchers of other countries to learn and know about Japanese disaster studies. We hope that this special issue will stimulate increasing contacts between Japanese and other researchers elsewhere, so that international cooperative studies on disaster hereafter will be facilitated. As a result, mostly of informal contacts, one collaborative piece of research has recently been undertaken on the operation of mass media organizations in disaster in Japan and the United States. Publication of the results of this collaborative work undertaken by the Institute of Journalism and Communication Studies at the University of Tokyo, and the Disaster Research Center at the University of Delaware will be published soon. However, perhaps the papers in this volume will generate enough interest on both sides of the Pacific so that we can look forward to many more collaborative studies in the future on many of the topics discussed.

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