

A STUDY OF MASS MEDIA REPORTING IN EMERGENCIES

Osamu Hiroi

The Institute of Journalism and Communication Studies
University of Tokyo, Tokyo 113, Japan

Shunji Mikami

Department of Sociology
Tokyo University, Tokyo 112, Japan

Kakuko Miyata

University of Tokyo, Tokyo 113, Japan

This paper examines the operations of mass media in disasters, the content of messages in disaster reporting, and the distortion in reporting warnings and disasters, based on empirical studies in several communities in Japan.

In the warning stage, we found that the broadcast media are the primary source of information in most cases. However, the warnings often did not reach a complete range of audience, nor could it induce an adaptive response among these recipients.

As for the mass media operation during and after the disasters, we found that the difficulties in mobilizing resources, uncertainties in reliable news sources, and malfunctioning communication channels were the main obstacles in reporting damages.

The main characteristics of the content of mass media reporting in disasters are described. Six types of information are found in the disaster reporting of the broadcast media: Information on (1) advice or directions, (2) disaster agent, (3) safety message, (4) damage, (5) countermeasures, and (6) restoration. The results of the content analysis of the broadcast of two stations on the day of the Nihonkai-Chuubu Earthquake shows that personal messages and damages information were the most heavily broadcast. This did not always match the information needs of the residents.

The media in Japan tend to exaggerate damages in

disasters, leading to the distorted perception of hazards. They also tend not to report sufficiently the news people want to get. The reasons for these inaccurate reportings are: (1) journalist's attitude to news editing and reporting, and (2) distorted images or myths among journalists. The content of newspaper reporting of a false warning was analyzed as a case study.

Introduction

The mass media in Japan are generally expected to perform two functions in times of disasters. One is the role, as news reporting agencies, to provide the public with newsworthy information on each phase of a disaster. The other is the role, as an emergency organization, to help in preventing or mitigating disasters. The latter function is especially expected of a broadcast media, since they have the capability to warn the audience of the impending danger and transmit directions or advice to the public much more promptly than print media.

The broadcast media in Japan are operated by both public and commercial organizations. NHK (Nippon Hoso Kyokai) is a public broadcast organization. It has two TV channels (general and educational) and three radio frequencies (general, educational, and FM music), which cover the whole country through a microwave network system. NHK is legally responsible for promptly broadcasting weather forecasts and warnings. Furthermore, the Disaster Countermeasure Basic Law in Japan designated NHK as one of the official emergency agencies in disasters, and assigns to it the role of providing the public with disaster-related information. In contrast with NHK, commercial broadcasting companies in Japan are operated as free enterprises. There are about 240 companies in total, most of which are affiliated with one or two of four major news networks (NNN, JNN, FNN, and ANB). The Broadcasting Act prescribes that both NHK and commercial broadcasting companies take the responsibility for broadcasting in order to help to mitigate disasters. However, no other laws refer to the legal responsibility of the commercial broadcasting companies in disasters. Therefore, in principle, the commercial broadcast companies voluntarily render services to the public during emergencies.

As for newspapers in Japan, they are all operated as private enterprises. Freedom of the press is guaranteed by the Constitution, and no legal regulations are imposed on them during emergencies or in normal times. Nevertheless, newspaper

companies often voluntarily serve the public in disasters by reporting various information, ranging from reports of damage to information on the restoration of lifeline utilities.

In this paper, we will discuss how broadcast media operate in times of warning or disaster situations, what are the characteristics of media content in times of disaster, and how certain media distort reality in reporting disasters. The evidence we refer to here was primarily obtained from several field studies and surveys of actual disasters conducted since 1978 by the research group of the Institute of Journalism and Communication Studies at the University of Tokyo.

Mass Media Operations in Emergencies

Mass media play an important role, both in the pre-disaster warning stage and in the stage during or after the disaster. In warning situations, it is the responsibility of the broadcast media to disseminate warnings to the public as soon as possible. Broadcast media also play a vital role during disaster in reporting damage or other environmental change and in offering an alternative means of communication among emergency organizations or citizens. In the restoration state of disasters, newspapers as well as broadcast media report heavily on disaster-related events, from detailed information on damage or other societal consequences of disasters to critical examination of total disaster prevention plans.

Dissemination of Warnings and the Media

In disseminating hazard warnings, broadcast media play a key role in Japan as well as in the United States (Carter, 1980). Our studies of citizen response to disasters indicate that the broadcast media are the primary source of warnings in most cases. For example, of those who received a tsunami warning after the Nihonkai-Chubu Earthquake on May 27, 1983, 57 percent heard it from TV, and 22 percent heard it from radio (Okabe et al., 1984; IJCS, 1985).

The warning system in Japan. Under the Meteorological Service Law, the Japan Meteorological Agency (JMA) is responsible for issuing watches and warnings for almost all kinds of natural hazards, except earthquakes.

The warnings or watches are disseminated from the JMA through various channels to emergency prevention agencies, private organizations which make contact with weather service companies, and the general public. For example, Figure 1 illustrates the information flow of the tsunami warning at the Nihonkai-Chubu

Sea) which includes both Akita and Aomori Prefectures.

This warning message was transmitted to the Akita local observatory at 12:15. The Akita local observatory, using a simultaneous telephone informing system, then disseminated it to NHK, ABS (Akita Broadcasting System, a commercial TV and radio station), AKT (Akita Kenmin TV, a commercial TV station), and Akita Sakigake Shinpo (a local newspaper company) at 12:18.

NHK broadcasted the tsunami warning at 12:19 on TV and radio, and repeated it every fifteen to thirty minutes until the evening. ABS broadcasted the warning at 12:19 on radio and at 12:25 on TV, while AKT telecasted the warning at 12:23. At first glance, it seems that the warning was disseminated through the media quite promptly. However, unfortunately the devastating tsunami hit the coast of Tohoku district so early that most people along the coast did not receive the warning before they actually saw the approaching tsunami personally.

For example, at the time of the earthquake, more than 300 workers were engaged in the construction of the Noshiro harbor. At about 12:25, the tsunami hit the harbor and instantly swept away these workers, killing 35 of them. Few of them heard the tsunami warning before they recognized the tsunami wave themselves. On a seashore at the Oga Peninsula in Akita Prefecture, about 45 students and their teachers were about to take lunch, when the tsunami struck them and killed 13 children. The time the tsunami hit them was estimated to about 12:15, just before the tsunami warning was broadcast. Thus, the tsunami warning through the media could not have helped much in mitigating damage in this case.

Not only was the dissemination of the warning too late to be effective, but it could not be made more effective in reaching the target and lead to an adaptive response. Our survey in Noshiro city, Akita Prefecture indicates that 54.2 percent of the citizens heard the tsunami warning on the day of the earthquake. In other words, the tsunami warning did not reach almost half of the citizens. As for the warning source, 57.1 percent answered that they heard the warning from TV, and 21.9 percent from radio. This indicates that the main warning source was the electronic media. This is consistent with the findings in the United States (Wenger, 1980). We also asked the respondents whether they feared the threat of a tsunami after they heard the warning. Just 50 percent of the respondents answered that they thought the tsunami would occur but would not cause such damage. Another 39.5 percent of the respondents answered that they did not expect a tsunami at all. Only 10 percent of the respondents answered that they thought a big tsunami would

hit and cause much damage. In other words, the majority of the respondents who heard the warning did not take it seriously.

Mass Media Reporting Activities During and After the Disaster

When a disaster strikes communities without much warning, emergency organizations sometimes face a severe stress situation, because: (1) the demand for emergency tasks from the outside suddenly increases and (2) the capacity of the organization drops because of the disaster impact and other factors (Haas and Drabek, 1975; Dynes and Quarantelli, 1968). As important organizations, the mass media also face such stress especially during the impact period. This organizational stress in mass media often brings about serious problems in disaster reporting activities, such as inaccuracy in reporting, shortage of resources, obstacles in communication, and neglect of "gatekeeping." In this section we shall focus on the following two subjects of disaster reporting and examine some of the above problems in reporting them: (1) loss in life and property, and (2) security of individuals.

Reporting Damages in Life and Property. The reporting of damages in human life and properties has always been the central subject of mass media activities in times of disasters. However, it has also suffered from various problems especially in the process of gathering information. From our field studies, we found that: (1) difficulties in mobilizing resources, (2) uncertainty in reliable sources, and (3) malfunctioning of communication channels, were the main obstacles to prompt and accurate reporting of damages during disasters. Let us examine these problems in light of past related research and our own field studies.

Difficulties in Mobilizing Resources. In times of disasters, there are so many things to report that almost any event in the stricken community has news value (Waxman, 1973). As a result, personnel and facilities for reporting have to be allocated to a much wider range of areas than in normal times. This often brings about serious conflicts in deciding where to send the staff and equipment, because most local media do not have enough resources to meet the increased demand in emergencies. In order to fill this gap between demand and capacity, the reporting section of mass media often mobilizes resources from other sections within the organization or from outside organizations. For example, during a large forest fire in California, the normal division of labor in a local radio station was suspended and almost all the staff members in the station engaged in disaster-related works (Adams, 1974).

At the Nihonkai-Chuubu Earthquake, all the staff of NHK Akita Station immediately assembled at the office of the news section and engaged in the tasks of disaster reporting. Those

who were off work also came to the station to participate. In addition to this inner mobilization, NHK Akita station obtained by evening as many as 95 staff personnel from the NHK Tokyo headquarters. In total, 180 persons were engaged in disaster reporting activities, of which the number of regular reporting staff members was only 55 (31 percent). The figures were not so different in other broadcast stations. Also, the local stations, especially NHK, mobilized a number of facilities for news-reporting from outside organizations. For example, NHK Akita Station was offered three helicopters, two hook-up cars, ten ENG cameras, and many other pieces of equipment by NHK Tokyo headquarters and other neighboring NHK local stations. Compared to NHK, ABS could not get enough resources from outside organizations. As a result, ABS failed to promptly gather information of damages.

Uncertainty in Reliable Sources. As Quarantelli found in community emergencies in the United State, mass media have a tendency to depend heavily on public authorities such as police and fire departments, or local government in gathering news and checking unconfirmed information. This is a result of adopting the "command post point of view" on local crises (Quarantelli, 1975). However, there is often uncertainty as to the reliability of these "official" sources in respect to the information on damage. This uncertainty and the "command post point of view" of the mass media sometimes result in inaccurate reporting of damages during disasters.

In our interviews with the representatives of three local broadcast media in Akita and Aomori Prefectures, we asked what kind of news source they used most frequently in covering the Nihonkai-Chuubu Earthquake and tsunami disaster. As is shown in Table 1, the police department was the most frequently used source of information on damage, and the public agencies were the main news source of almost all kinds of disaster-related information for every station.

Let us now describe an episode to show how the excessive dependence on official sources resulted in inaccurate reporting of damage. As mentioned earlier, at about 12:15, fifteen minutes after the Nihonkai-Chuubu Earthquake occurred, 45 primary school children and their teachers were hit by the huge tsunami at the seashore of Kamo-aosa at the Oga Peninsula on the west end of Akita Prefecture; thirteen children were killed. As the disaster site was remote from the urban area and telephone lines malfunctioned because of the overload at that time, only unconfirmed, conflicting, and fragmentary reports came in for hours. NHK obtained the first official report at about 12:40 from the fire stations of Oga district to the effect that a child

Table 1: Main News Sources of Disaster-Related Information on the Day of the Nihonkai-Chuubu Earthquake

Information Items	1	2	3	4	5	6	7	8	9
Nature of Earthquake and Tsunami	A	●							
	B	●		○					
	C	○		●					
Prospect of After-shocks and Tsunami	A	●							
	B	●							
	C	●							
Damage of the Earthquake and Tsunami	A			●					○
	B			●	○				○
	C			●					○
Search and Rescue Activities	A			●					○
	B			●	○				○
	C			●					○
On Safety of Citizens	A			○			●		
	B						○	●	
	C								
Countermeasures by Public Agencies	A		●						
	B		●		○				
	C		●					○	
Restoration of Life-line Utilities	A		●			○			
	B		●			○			
	C		○						●
Traffic and Road Information	A			●					
	B		○	●					
	C		○	●					
Supply of Foods and Other Materials	A								
	B		●						
	C		●					○	
Financial Aid and Compensation	A								
	B		●		○				
	C		●					○	
Change in Formal Schedules	A								
	B		●			○			
	C		●					○	
Human Episode of Casualties	A						○	●	
	B						○	●	
	C							●	○

1. Broadcast Stations 2. Meteorological Observatories 3. Local Government
 4. Police Department 5. Fire Stations 6. Firms and Industry 7. Citizens
 8. Disaster Site 9. Other Sources
 A. NHK Akita Station B. ABS C. NHK Aomori Station
 ● The most frequently used sources
 ○ The second most frequently used sources

was swept away by the tsunami at the seashore of "Toga" at the Oga Peninsula. However, this report was quite inaccurate as to the number of casualties and the name of the disaster site. The next information actually broadcast at 12:53 was from the Police Headquarters of the Akita Prefecture; it reported that about 50 primary school children were swept away by a tsunami. At 13:01, NHK TV reported the information from the Police Headquarters that about 50 primary school children and others were swept away by a tsunami and that seven to eight were rescued, but that the other 40 persons were needing help. This quite exaggerated report was not corrected until 16:30 when at last an accurate report reached the media. During this period, NHK did receive a number of "unconfirmed" reports on the disaster from other sources which might have been more accurate than those from the official sources, but only the reports from official sources such as the police department or the fire station were accepted as reliable or "confirmed" news (Okabe et al., 1984; Mikami, 1984; IJCS, 1985).

Malfunctioning of Communications Channels. In times of large-scale disasters, telephone lines almost always are subject to a state of input overload and malfunction as people pick up telephones simultaneously and try to contact the "victims" in the affected area. The physical impact of disaster also sometimes destroys telephone lines and other communication channels. These obstacles often make the activities of covering and reporting disasters by reporters quite difficult, and are likely to result in the inaccurate reporting of damage, as mentioned above.

Reporting on the Safety of Individuals and Groups. In community emergencies, malfunctioning of telephone lines and traffic failures often prevent citizens from contacting family members, relatives and friends in the affected area. Many people are also eager to know whether their family members and friends are in safe locations or not. In such situations, broadcast media, especially radios, play a vital role by reporting on the safety of individuals or groups, and by providing the audience with an alternative means of interpersonal communication. For example, during a blizzard in Canada which lasted several days, one of the local radio stations in the affected area switched the regular program totally into the "Open Line Show" and let everyone use the program as an interpersonal communication channel (Singer, 1972). During a forest fire in California, a local radio station also broadcast "personal messages" whenever it felt that response to them could help save lives or property (Adams, 1974).

The local radio stations in Japan have been developing the tradition of broadcasting personal messages which offer information on the security of individuals when a large and

devastating disaster occurs, although to send personal messages through the broadcast media is prohibited by law. For example, both NHK Akita radio and ABS radio aired personal safety messages on the day of the Nihonkai-Chuubu Earthquake from 13:00 to midnight. It was during the season of excursions by schools and kindergartens, and the news of the missing children made a lot of parents whose children were on an excursion to the seashore quite anxious. Consequently, most of the personal messages were from teachers who asked NHK or ABS to tell the parents over the radio that their pupils were all safe. The personal messages were also broadcast during the heavy rainfall and flood disaster in Nagasaki. When the heavy rainfall began to cause flood and landslides in Nagasaki Prefecture, a number of telephone calls were made to the NHK Nagasaki station and the local commercial broadcast media, including NBC. Most of the calls were from people who asked the station to inform their family of their safety or to tell their family members to contact them. The total number of personal messages which NHK Nagasaki received on that night amounted to 2,600. NBC also received and broadcasted a lot of personal messages from the citizens during the night. According to our survey of the citizens of Nagasaki city, 51 percent heard some personal messages from radios on the night of the flood and 96 percent of the evaluated the broadcast of personal messages favorably (IJCS, 1984).

The broadcast of personal messages has often presented a difficult problem of checking messages or so-called "gatekeeping." Waxman found that during disasters, the local radio stations faced a severe stress situation, and a paradoxical situation arose in which a news shortage developed because the station's expanded disaster coverage could not be filled by official sources of news. As a result, an emergent norm develops that "all information should be disseminated from all sources" whether it is official or unofficial to meet the increased demand from the public (Waxman, 1973). Thus, the normal "gatekeeping" is neglected in these emergency situations. The broadcast of personal messages in disasters seems to follow a similar process. In fact, most of the personal messages from citizens were directly broadcast without confirmation in both Nagasaki and Akita. For example, in Akita, NHK and ABS received respectively 250 and 373 personal messages from citizens. It was only 20 percent and 2 percent respectively which NHK and ABS checked and did not broadcast. In Nagasaki too, both NHK and NBC broadcasted almost all of the messages (IJCS, 1984).

Contents of Mass Media Reporting in Disasters

General Characteristics of the Contents and Information-flow of Broadcasting

When a disaster occurs, the broadcast stations gather, edit and report many kinds of information as news. We can point out several characteristics of the content and flow of information through broadcasting stations, which is summarized as follows:

	Content	Speed	Coverage	Permeation
Broadcast Media	Cognitive Information	Higher	Wider	Larger
Official Organizations	Directive Information	Lower	Narrower	Smaller

First, regarding the content of disaster information, what the broadcasting stations transmit to audiences is mainly "cognitive information." This includes any objective information, such as issuance of warnings, the reports of human injury and property damage, the stories of people who escaped from death, the reports of restoration of lifeline utilities, and so on. On the other hand, the official disaster prevention agencies mostly transmit "instructions to citizens." These include order or advice about what countermeasures all organizations and individuals should take at the time of disaster. These messages contain all kinds of warnings as well as evacuation orders which the mayors or town heads issue to inhabitants in emergencies.

Second, with respect to the speed of transmission, information through broadcasting stations is generally much more prompt to reach people than that of the official channels, because in the official channels the information must be relayed several times, and the staffs must write down the information they receive and then transmit it to the other organizations.

Third, there are some differences between the broadcast media and the administrative organizations' information networks in coverage and penetration. "Coverage" refers to how wide an area the information can reach, and "penetration" refers to how many inhabitants in a given area receive the information. The information through broadcast media generally reach a wider

area and a larger population than that of the administrative organizations. This is because the equipment of the official organizations for transmitting disaster information to inhabitants only covers a single city or town, while many TV and radio stations in Japan have a prefecture-wide service area. On the other hand, the broadcast media generally have a lower level of penetration. Administrative organizations can utilize several public address systems, such as "publicity cars" and "wired or wireless broadcasting systems" which cover a whole city or town, in order to inform all inhabitants of disaster events. On the other hand, information disseminated by the broadcasting stations can only reach those who happen to be listening to the radio or watching television. Thus the degree of penetration depends on the size of the audience at times of disaster.

The Types of Information Transmitted by Broadcast Media

Information through broadcast media during and just after the disasters can be classified into the following six types:

- (1) advice or directions to prevent or mitigate damage;
- (2) information about the disaster agent;
- (3) safety messages for individuals or groups;
- (4) information about injury and physical damage caused by the disaster;
- (5) information about countermeasures taken by official organizations; and
- (6) information about the restoration of lifeline and other urban utilities.

Let us explain briefly these six types of information. We will begin with "advice or directions to prevent or mitigate damage." As mentioned above, broadcasting stations in Japan play a dual role at the time of disaster, acting both as news-reporting agencies and as disaster prevention agencies. Therefore, they always broadcast a variety of disaster prevention information in order to decrease damage, especially in the earlier stages of disaster. For example, such information might be transmitted as follows: "extinguish flames and switch off the gas," "beware of the approaching tsunami," and "refrain from panicking."

"Information about the disaster agent" is also provided by the broadcasting stations serving as disaster prevention agencies. This kind of information includes, for instance, all of the warnings and watches, and some information about the magnitude and seismic intensity of earthquakes. This is transmitted by the meteorological agencies to almost all broadcasting stations, and the stations in turn are responsible for broadcasting the information as promptly as possible.

"Safety messages for individuals and groups" have been

broadcasted during severe disasters in Japan since the "Isewan Typhoon" in 1960, which killed about 4,500 people. When serious disasters occur, public transportation systems are often interrupted and telephone lines are also destroyed or overloaded. For these reasons, many people deprived of the means of contacting family members, call up the broadcasting stations and ask them to send personal messages. Examples of such messages are: "(to my family) Don't worry, I'm safe in the next town," "(to my father) Please call us from where you are now, or return home as soon as possible," "to Mr. A who went fishing the seashore this morning, please contact your family as soon as you can."

In contrast to the above three types, the other types of messages are chiefly gathered and reported by the broadcasting stations as news-reporting agencies. "Information about damage" refers to how many people were killed or injured and how many houses, roads or bridges were destroyed by the disaster. Reports of how people survived or were helped are contained in this category.

"Information about the countermeasures taken by the official organizations" includes reports about search and rescue activities carried out by the police, fire stations or military forces, and about housing and food supplies provided by the Emergency Operation Center just after the disaster.

The last, "information about the restoration of lifeline and other urban utilities," refers to reports of how many days the electricity and power supplies will be interrupted, and reports on restoration plans of when and where each lifeline utilities will be repaired.

All broadcasting stations more or less disseminate the above six types of information during disasters. Generally speaking, in the earlier stages of a disaster they tend to transmit mainly "advice and directions to decrease damage," and "information about the disaster agent," and "information about injury and property damage," "safety messages," and "information about the countermeasures of official organizations." In the later stages, "information about the restoration of lifeline" is transmitted.

Comparing television and radio, both of them broadcast "advice to decrease damage," "information about the disaster agency," "information about the countermeasures of the official organizations," and "information about the restoration of lifeline utilities." But with regard to the other two types, television seems to put emphasis on "information about the injury and property damage," and radio stations often focus on "safety messages of individuals or groups."

In Japan, television programs are normally relayed through networks to many additional stations, and their audiences are

located throughout several prefectures which may not have suffered damage. Therefore, television stations must report to their audience the exact nature of the disaster and the extent of disaster-caused injury to people and damage to property in the affected area. On the other hand, many radio programs serve only local residents; therefore, during a disaster, they can supply much more relevant information to the residents of the stricken area than television programs.

The Contents of the Radio Program in the Nihonkai-Chuubu Earthquake

Next, based on the results of content analysis of radio programs during the Nihonkai-Chuubu Earthquake, we will explain the frequency of transmission of the six types of information by the broadcasting stations.

The earthquake occurred at 12:00 on 26 May 1984. The earthquake and subsequent tsunami caused great damage in the Tohoku District (the north-eastern district in Japan). Akita Prefecture was particularly heavily stricken by the shock which registered "5" on the JMA seismic intensity scale, and also suffered from the severe tsunami. In Akita Prefecture, three people were killed by the earthquake, 79 people by the tsunami and 1,138 houses were totally destroyed. In all, total damage in the prefecture amounted to 147,521,266,000 yen (about 615 million dollars).

We conducted a content analysis by analyzing the type of radio programs by the NHK Akita Broadcasting Station and the ABS Akita Broadcasting company which were transmitted on the day of the disaster. The tapes of the NHK broadcasts cover programs about 260 minutes long (from 12:10 to 16:32), and those of ABS cover about 660 minutes (from 12:02 to 23:00). All programs of both stations (except one ABS program) dealt in some way with the earthquake or the tsunami. The total number of messages broadcasted was 484 for NHK and 1,470 for ABS. The average number per minute was 1.86 for NHK and 2.23 for ABS.

Figure 2 shows the kinds of information broadcasted by both stations. The item most frequently broadcasted by NHK was "other" (31.8 percent), most of which was advice and directions, such as instructions to put out fires or to drive carefully. The item most often disseminated by ABS was "safety messages of individuals or groups" (29.6 percent). For both stations, the next most often broadcasted item was "property damage by the disaster" (NHK-22.9 percent, ABS-28.5 percent), and the third most often broadcast item was "human injury by the disaster" (NHK-20.2 percent, ABS-17.6 percent).

Figure 2: Content Analysis of the NHK and ABS Radio Programs on May 26, and the Information Needs of Noshiro Citizens on That Day.

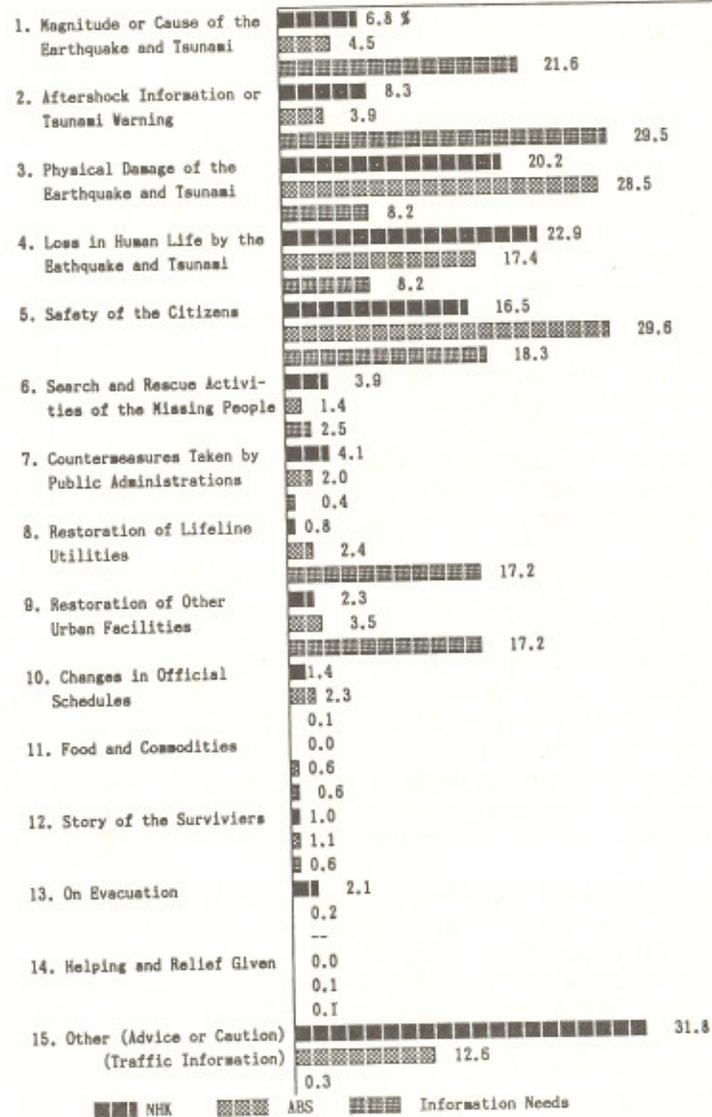


Table 2 illustrates how the kinds of information broadcasted by the two stations changed with the passage of time. Immediately after the disaster (from 12:00 to 14:00, NHK mainly radiocasted "others" (mainly disaster prevention information). From 12:00 to 13:00 considerably more information about the disaster agent was broadcast such as "magnitude or cause of the earthquake and tsunami" and "aftershock information and tsunami warning." But as time went by, information about physical and personal damage gradually increased and reached a peak from 15:00 to 16:00. Safety messages were broadcasted most frequently from 14:00 to 15:00.

ABS broadcasted "information about property damage" most often between 13:00 and 14:00, and "information about personal damage" continued to increase from 16:00 to 18:00. "Safety messages" suddenly increased after 13:00, and amounted to more than half of the total topics from 18:00 to 19:00.

As mentioned above, on the day of the earthquake, the two radio stations, as disaster-prevention agencies, broadcasted advice and directions to decrease damage (particularly NHK) and many safety messages for inhabitants (particularly ABS). On the other hand, as news-reporting agencies, they broadcasted many reports about injury to people and damage to houses, roads, bridges and so on.

The next question to answer is, how much did the contents of broadcast media gratify the information needs of the residents in the disaster-stricken communities.

Figure 2 shows the kinds of items which the citizens of Noshiro City in Akita Prefecture wanted to know on the day of the earthquake. The information people wanted to know most was "future possibilities of earthquakes and tsunami," (29.5 percent), the second most needed item was, "the size and place of earthquake," (21 percent), and the third most was "safety message of individuals and groups" (18.3 percent). To sum up the responses, about 70 percent sought information which broadcasting stations as disaster-prevention organizations can or must supply to audiences. On the other hand, 8.2 percent of the respondents wanted "information about damage by disasters," 17.2 percent needed "information about the restoration of lifeline utilities," and only 2.5 percent "information about search and rescue activities." This means that the role of the broadcasting stations as news-reporting agencies meant less to people suffering from serious disaster than the role as disaster-prevention agencies.

Finally, we can point out some differences between two radio stations with regard to the ways in which they broadcast the above disaster information. First, there was a difference in

Table 2: The Change of Broadcasting Programs With the Lapse of Time
(There May Be More Than Two Items in a Program)

1. the NHK

	12:00~	13:00~	14:00~	15:00~	16:00~
Magnitude or Cause of the Earthquake and Tsunami	% 14.0	% 4.3	% 2.0	% 11.5	% 3.5
Aftershock Information or Tsunami Warning	19.4	6.5	1.3	9.6	3.5
Physical Damage of the Earthquake and Tsunami	29.0	11.2	23.1	29.8	0
Personal Damage of the Earthquake and Tsunami	1.6	23.7	20.4	55.8	47.4
Safety of Persons and Groups	0.8	11.8	40.8	0	8.8
Search and Rescue Activities	0	1.1	4.6	15.4	5.3
Countermeasures Taken by the Public Administrations	0	9.7	5.3	3.8	1.8
Restoration of Lifeline Utilities	0	0	2.0	1.9	0
Restoration of Other Urban Facilities	0	0	3.3	1.9	8.8
Food and Commodities	1.1	2.6	0	3.5	0
On Evacuation	0	0	0	7.7	1.8
Helping and Relief Given	7.0	0	0	1.9	0
Others (Mainly Advices)	50.4	40.9	30.3	1.9	7.0

Table 2: Continued; 2. the ABS

	12:00~	13:00~	14:00~	15:00~	16:00~	17:00~	18:00~	19:00~	20:00~	21:00~	22:00~
Magnitude or Cause of the Earthquake and Tsunami	% 23.5	% 5.1	% 7.1	% 0	% 2.7	% 7.5	% 5.6	% 0.8	% 4.2	% 1.2	% 3.3
Aftershock Information or Tsunami Warning	10.3	7.0	3.9	1.1	1.1	5.8	4.5	0	3.3	4.1	9.8
Physical Damage of the Earthquake and Tsunami	47.1	51.0	32.3	41.4	8.6	20.8	34.8	5.3	22.5	34.7	21.3
Personal Damage of the Earthquake and Tsunami	8.8	10.8	22.0	21.5	29.0	29.0	30.6	9.0	6.1	11.7	12.4
Safety of Persons and Groups	1.5	24.8	28.3	16.1	32.8	13.3	51.7	65.6	27.5	32.9	37.7
Search and Rescue Activities	0	2.5	2.4	0.5	0	1.2	0	0.8	2.5	3.5	1.6
Countermeasures Taken by the Public Administrations	0	5.1	1.6	1.1	0.5	2.3	9.0	1.5	0.8	0	1.6
Restoration of Lifeline Utilities	0	0	1.6	0.5	3.8	5.2	5.6	0	4.2	1.8	4.9
Restoration of Other Urban Facilities	1.5	3.8	7.9	4.8	1.6	4.0	4.5	5.3	1.7	0	4.9
Food and Commodities	0	0	0	0.5	1.6	0.6	2.2	1.5	0	0	0
On Evacuation	0	0	1.6	1.6	3.2	1.2	1.1	1.5	0	0	0
Helping and Relief Given	0	0	0	0	0	0	1.1	1.5	0	0	0
Others (Mainly Traffics)	10.3	12.7	18.1	8.6	10.2	12.7	14.6	10.7	14.2	10.6	24.6

the manner in which the "tsunami warning" was broadcasted. The warning was issued to the "fifth district" (the north-eastern coast along the Japan Sea) at 12:14 by the JMA Sendai regional observatory. It was transmitted via the Akita local observatory to the two local broadcasting stations at 12:18. NHK radio (also television) station broadcast the warning at 12:19, after sounding a chime to attract the attention of the listening (and viewing) audience. The message was repeated several times in serious tone, and went as follows:

We inform you of a tsunami warning. The tsunami warning has just been issued. The Sendai regional observatory issued the warning at 12:14 for the north-eastern coast of the Japan Sea.

ABS also radiocasted the warning at 12:19. Unlike NHK, the ABS announcer did not use any special device to gain the special attention of the audience. Moreover, ABS did not draw attention to the possible tsunami danger before the warning was issued, while NHK did at 12:13 and 12:17. These facts suggest that ABS was less aware of the tsunami danger than NHK.

Second, regarding information about injury and property damage, the news source of NHK were mainly limited to the official organizations such as the prefectural police headquarters and the emergency operation centers in some cities and towns. But ABS, in addition to information from the official organizations, received and reported news from various other sources such as the general public and people who had amateur radio equipment. Therefore, ABS damage reports were generally much more detailed and had much more variety in content than those of NHK. This means that the former was more useful to people in the affected area than the latter, for they wanted to know about the damage to their community in detail in order to get information about the safety of family members and if they could return home quickly. However, ABS broadcasted many reports without giving information about the source, such as, "according to the announcement of the emergency control center," or "the news is not yet confirmed," while almost all of the reports broadcast by NHK were accompanied with such credit. At ABS the ordinary "gatekeeping functions" were so confused that much of the information received by the staff was directly transmitted to announcers without being checked, and was broadcasted without indicating the source.

Third, during this disaster, both stations disseminated many safety messages. ABS began broadcasting such messages at 12:56, and NHK at 13:05. But the messages broadcasted by NHK were restricted to those about children and pupils of kindergartens, nurseries, primary schools and junior high schools. On the other

hand, ABS broadcasted a greater variety of messages. For instance, they disseminated many messages from people who asked their husbands or parents to return home quickly. The number of messages broadcast by ABS was also much greater than that of NHK.

Mass Media Coverage of Crises

There are some studies on mass media reporting during and after crises or disasters, and most researchers would agree that the mass media have been carriers of inaccuracies and rumors concerning these emergencies.

Some studies show that early media reports of an unexpected event would tend to exaggerate or emphasize the extent of the crises (McKay, 1983; Rosengren et al., 1975; Scanlon et al., 1978). These findings are consistent with one of the authors' contention that, in Japan the crisis reporting by the press sometimes carries gross ambiguities and inaccuracies (Miyata, 1985).

In this paper, we will examine several cases of confusion and errors in Japanese mass media reports. Afterwards, we will proceed to the reason why and the conditions when the media tend to report with such confusion and errors.

Mass Media Reports During and After Disasters

Japanese Media Reporting on Disasters. In general, disaster reports have two problems, i.e., that of coverage comprehensiveness and that of content accuracies.

Concerning the coverage of comprehensiveness, the media have two problematic aspects.

First the media tend to report only extremely prominent cases. Japanese journalists and broadcasters pay attention to the most prominent cases such as the seemingly most damaged spot, the most miserable victim, or the most tragic incident, and are inclined to report them in detail. As a result, these emphases could encourage people to perceive only the most hazardous dimensions of disaster and to promote non-victims' perception of the victim as helpless.

For example, at the Nagasaki flood disaster, national TV broadcasted films which suggested that the most famous tourist spot in Nagasaki city was devastated. The national newspapers also produced many large photographs which portrayed the most destroyed spot. Owing heavily to these reports, the number of tourists who visited the other Nagasaki tourist spots which had not been damaged at all, fell sharply in the following year (Ikeda, 1984).

Second, the media tend not to report sufficiently important news and information which people want to get; they do this by devoting large amounts of space or broadcasting longer periods of time on some particular prominent stories. In general, journalists have to judge, out of huge amounts of potential news, what is valuable to report to the public. Because of limitation of space and time, this often results, because of the standards of news selection, in discarding some important news items.

For example, we found a discrepancy between the information which people wanted to get and that which local newspapers reported during one week after the Nihonkai-Chuubu earthquake. From our sample survey, we observed that the people who had been stricken by the earthquake most wanted to get information concerning the restoration of lifeline utilities (66.3 percent), followed by information on future prospects of the earthquake and tsunami (50.8 percent). On the other hand, two local newspapers devoted about half of their reporting space given to the disaster to items about damages in life and property, and only about 10 percent of the space was given to the restoration of lifeline utilities. Thus, they could not be said to have satisfied quantitatively or qualitatively the information need of people in the disaster-stricken area.

In the next section, we will discuss the inaccuracies of content in Japanese media reports.

Japanese mass media have a tendency to emphasize the extent of the crisis or to exaggerate the incident which in reality is not so serious. It is easy to recognize that Japanese media sometimes overdramatize social and individual reactions to disasters or warnings of impending disaster, and overstate the total loss. We can enumerate the ways of exaggeration or emphasis on the extent of crisis as follows:

1. There is an overestimation of the number of victims or losses and so forth. For instance, in the incident of the tsunami just after the Nihonkai-Chuubu earthquake, fourteen elementary school children were affected. Akita-hoso (radio) broadcasted that in the early stages 40 children were missing. This reported overestimation of how many children were missing or lost, lasted a long time. More than three hours passed before an accurate report of the number of victims was aired.

2. There is an incommensurate use of the term "panic." Newspapers often report that panic took place, even though there was no instance of flight behavior or evacuation. Journalists often find people preparing for evacuation and gathering their valuables and taking-out-food. They sometimes judge this behavior as an indication of panic.

A newspaper reporting on a false warning is a good example of this type of judgement. We will explain this in detail later.

3. There is use of extremely conclusive remarks.

4. There is use of affective and sensational expressions, e.g., the terms "Miserable," "Terror," "Tragic."

5. There is the use of superlatives or of adverbs which overstate the extent of something such as "very much."

The Reasons Why the Media Tend to Report Only Prominent Cases and With Inaccuracies. Given the fact that the media tend to report only prominent cases and with inaccuracies, an interesting question is why such tendencies persist. It should be emphasized here that the authors do not wish to imply that there is a deliberate attempt to distort, but that there are certain factors which reinforce these misconceptions as well as factors which inhibit correcting them.

Here, we would just mention two major causes.

One of them is journalists' policies on news editing and reporting. One policy is to report quickly rather than accurately. Another policy is to focus on the dramatic aspect of disasters. These both contribute to the persistence of distortions.

Another cause is the popular images of disaster behavior. These images usually center on themes of personal and social chaos. The major images are as follows: During and after crisis or disaster, people will panic, people will be dazed and shocked, and anti-social behavior will increase (Dynes and Quarantelli, 1972; Wenger et al., 1975).

Among these images, the most serious one is the panic image. There exists a wide gap concerning the conception of panic held by ordinary people including journalists, and by disaster researchers. The latter insist that for panic to develop there must exist a very unusual set of circumstances including perceptions of probably personal entrapment within a limited spatial area, and an extremely sudden and very direct threat to life (Quarantelli, 1954). On the other hand, most journalists have a different image of panic. They insist that people act irrationally and show panic in every crisis situation. Therefore, journalists apply the term "panic" to every situation where some persons show strong psychological or behavioral reactions to the disaster or the warning in question, even though they may actually adopt adaptive coping behavior. Journalists also apply the term to a situation of information convergence, for example, the situation when the telephone system is jammed by a large number of phone calls.

On the basis of this image, journalists tend to collect only confirmative information for the image, and thus are inclined to report it. For example, they often encourage persons

interviewed to give answers consistent with this image. Hence, they unintentionally tend to distort reports of the behavior in the disaster. It is important here to point out some consequences of disaster reporting through these images. A most important consequence is the implantation and the persistence of the idea that panic is inevitable. This is an effect of image agenda-setting or an effect of the pseudo-environment created by the mass media.

The Conditions or Occasions When Media Reports Through Disaster Image. When do journalists judge and select news through their disaster image? We would like to enumerate some of the conditions or occasions for them to do so.

1. These include the occasions when journalists are confronted with deadlines. On these occasions, they cannot afford any time to confirm factual details and check their validity. Therefore, they are likely to write their reports based only on their disaster images.

2. They include the occasions when accurate information cannot be transmitted through the mass media news gathering system. In the process of information transmission from reporters on location to their editors, disaster reports often dissolve into bits of fragmentary and speculative ideas.

3. They include the occasion when journalists and editors do not have expert knowledge on disasters. Of course, it is desirable for them to know about the mechanism of disaster occurrence, the effective countermeasures to prevent damages, meanings of special technical terms like "panic," and so on. In Japan, however, they usually have little time to get such knowledge.

4. They include the occasion when there are few channels to gather information on the disaster agent in question, and on material or physical damages caused by the disaster. During the crisis, it is difficult for journalists to go to the damaged area to get detailed information. So, they can obtain only fragmentary and sometimes speculative items from some particular channels.

5. When the conditions are such so that few journalists can report and cover the crisis due to the shortage of personnel. In such a case, the amount of information gathered might be too little to allow for accurate reporting.

Newspaper Reportings on a False Warning

In order to exemplify the problematic tendencies of newspapers, we will compare the result of our own sample survey on human psychological and behavioral reactions to a false warning with the findings from our content analysis of newspapers that reported on the same incident.

On the night of October 31, 1981, an earthquake warning message about the great Tokai earthquake was broadcasted through 45 outdoor loudspeakers of the public address system in Hiratsuka city, in the Tokai earthquake-prone area of Japan. The warning which had been tape-recorded was broadcasted automatically but accidentally from a wireless studio located in the City Hall. The message from the mayor included a warning and instructions for adaptive behavior. We have examined this case by using a sample survey of Hiratsuka citizens.

The Sample Survey. The survey was carried out through face-to-face interviews with a randomly sampled 2,400 adult residents from Hiratsuka city. Around 75 percent of the total sample provided useful information (N=1,803). Some 90 percent of them were in the city when the warning was issued (N=1,631).

In summarizing the results, we found that, out of 1,631 citizens who were in the city, only 20 percent were able to listen to the warning directly from the public address system before they were informed that it was false (N=328).

It was also evident that even among those who heard the warning, only 20 percent believed the warning to be real. It follows that just 3.3 percent of all the sample believed it.

Concerning the psychological responses, the result demonstrated that most of the citizens (72 percent) did not feel any personal danger or imminence as a result of the warning. Only 3 percent of the total sample felt any psychological disturbance.

Corresponding to these results, we found 5 percent of the total sample undertook pre-evacuation behavior, that is, prepared to save their valuables and to take-out-food and beverages in case of an emergency. There were only two citizens among the total interviewees who actually evacuated (0.1 percent). Furthermore, no instance of panic or hysterical reaction was reported in our sample. These results are consistent with the well-known finding that panic rarely occurs in disasters or in pre-disaster warning periods.

The Content Analysis of Newspaper Reporting of the Hiratsuka Incident. In order to examine the content of mass media reportings concerning the Hiratsuka incident, we made a qualitative and systematic content analysis of three major newspapers, i.e., the Asahi Shinbun, the Yomiuri Shinbun, and the Mainichi Shinbun. The analysis was on the content of these dailies for one week after the incident. The results confirmed that there were two problematic tendencies in the mass media reporting of the incident.

The Coverage Comprehensiveness. According to our population survey, among those who heard the warning, a relatively small number of people had strong emotional and behavioral responses. But the Asahi newspaper had nine stories about ordinary citizens,

and five of these stories indicated that the people involved had prepared to evacuate or had actually evacuated. In doing this, the Asahi paper largely reported the most extreme behavioral reaction.

The press also had a tendency to ignore the serious fact that 80 percent of the citizens were not able to hear the warning directly from the loudspeakers, although the warning system should have directly reached most residents in the city. Our counting of the total frequency of the two terms, i.e., "was not able to listen to the warning" and "did not hear the warning," shows that the Asahi paper used those terms only once during all of the first week after the incident, and it took four days for the Yomiuri newspaper to report this serious problem. Our data revealed that the newspapers hardly reported the fact that most citizens had not heard the warning.

Content Accuracies. Given that our survey finding showed that there was no panic behavior or hysterical reactions at all, it is clear that the newspapers overdramatized panic behavior.

To begin with, the frequency of the term "panic" was counted. The result shows that the Yomiuri paper used the term "panic" five times, whereas the Asahi newspaper used "near panic" four times, and most of the use was concentrated on the day following the incident.

Next, we considered whether the newspapers used the term "panic" for their headlines. The Yomiuri, on the next day, had as a top headline the phrase "Panic to the warning" (13 column centimeters), whereas the Asahi reporter "countermeasures for preventing panic caused near panic" at the backpage (9 column cms). It follows that newspapers reported panic which had not occurred in reality. In other words, the press exaggerated or even invented panic, and gave the impression to the readers that panic had occurred as a result of the false warning. This tendency was clear, in particular in the morning papers of the next day of the incident. As the days went by, however, this exaggeration about panic behavior, tended to disappear.

In fact, content analysis shows that on the day following the accident, the 1st of November, the lead story of the Yomiuri read, "Panic occurred somewhere in the city." On the 4th day, the editorial read, "Why didn't the false warning cause panic?," and finally on the 7th, the feature article said, "There was no panic reaction except among a few citizens." In the beginning, the reporters of the Yomiuri seems to have judged the warning situation as a panic one. However, as they developed the factual details of the incident, they were forced to change their original judgement. At the end, they seem to have reached the conclusion that there was no panic.

Finally, other major discrepancies between the newspaper reports and the result of our survey are shown in Table 3.

Table 3: The Comparison of Survey Data with Media Picture. Percent.

	Survey Data	Media Picture
Warning reception		
Not able to hear warning	80 ^a	A few
Psychological reaction		
Disturbed	3.0	Many
Behavioral reaction		
Prepare to evacuate	5.0	Some
Evacuate	.1	A few
Social phenomena		
Panic	None	Occurred

a Percentage of total sample.

We have pointed out the present conditions and situations of disaster reporting by Japanese mass media. When viewing the communication systems during and after disaster in Japan, we have noted there are reporting systems by the local administration as well as by the mass media. However, we have focused exclusively on the mass media reporting and have discussed some problems inherent in them.

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