VII. TECHNOLOGY AND PUBLIC INFORMATION

1. Telecommunication systems

These systems are essentially passive message carriers: the wired connections, such as telephones, telegraphs and telex — and their extension under the oceans as submarine cables; and the wireless connections, such as radio-telephones and telegraphy — and their extension across space as communication satellites. They are all electronic in nature, as compared with the earlier carrier systems of heliograph, semaphore and pigeon.

Telecommunication systems are used extensively before, during and after disasters by international relief agencies telexing their national offices; by government departments communicating with each other; by foreign mass media telephoning their correspondents who send back their news-film by satellite; by overseas relatives telegraphing their families; by individual members of the public telephoning the police department or local radio station; by the 'head-man' telephoning the capital along the single wire which runs across country to his village.

However, it should be recalled that almost half of the world's telephones are in North America. The United States has 64 per 100 inhabitants; Guatemala has less than 1 per 100; Ethiopia has 0.2 per 100 and Bangladesh has even fewer.

Public information functions effectively with a telecommunication infrastructure allowing information to flow in and out of the control centre. The advisory services have less difficulty in collecting data and disseminating warning advice with telecommunications assistance. The public is informed via transistor radios since lines are working between the control centre and the radio station. But telecommunication is not a fact of life in large areas of the world, however, and loudspeakers, sirens, red-flags and wall-posters take the place of electronic visual-displays, computer print-outs, tape-recorded messages and radio broadcasts. (Fig. 5 shows a poster used in Madagascar).

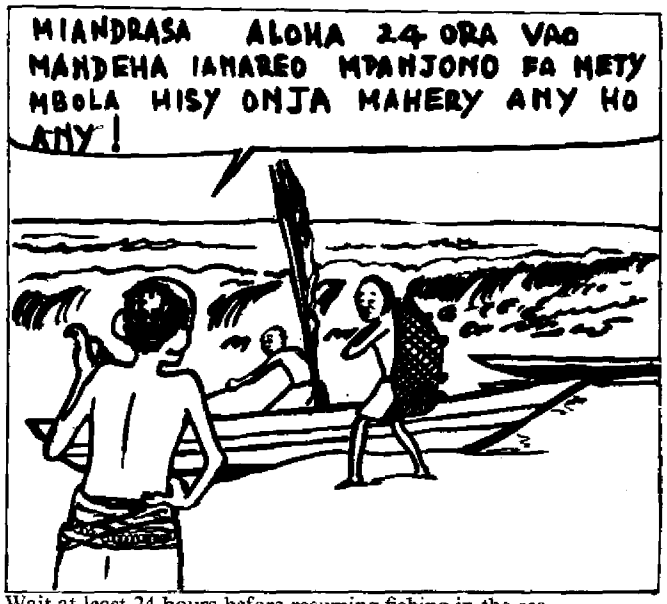
AORIAN' NY RIVODOZA

(AFTER THE CYCLONE)

VONJEO NY MARATRA

(HELPING THE INJURED)

Do not leave your shelter too soon.



Wait at least 24 hours before resuming fishing in the sea.

Do not follow paths except those away from river beds.

Do not drink flood water as it is polluted.

Figure 5

Poster giving instructions for the post-cyclone period. (Government of Madagascar).

2. Community media systems

The mass media systems (radio and television, newspapers, books, and films)are well recognised. Not so well recognised are the folk media systems described in the next section. In between these two categories are private media systems which borrow a little from each of the other categories.

The telephone is usually classified as a telecommunication device for the sending of individual messages, but it can become a broadcast system if hooked into a loudspeaker before crowds, or run live on a radio station 'open-line' programme. It can become a closed-circuit media system if used simultaneously by a number of people who are holding a 'remote conference'. There have even been telephone media programmes in which subscribers listen to news at certain times of the day by telephone, similar to subscribers in numerous countries calling to get the time or to hear a weather forecast.

During disasters the telephone becomes a kind of community media system for the dissemination of public information. The public questions and informs officials by telephone; officials in turn, inform the public and sometimes each other the same way. It is quite common for appraisals to be carried out by telephone, with many telephones being used at the same time to ask identical questions of large numbers of people.

Groups of people held together by telecommunication facilities, such as municipal services (fire, police, public works), educational authorities (schools, bus services), taxi companies and government, business and industry offer other examples of community media systems. Usually these are fixed-frequency radio channels in which each major point in the network can send or receive messages, or leased telephone or telex lines. In times of crises these telecommunication nets hum with activity as the various members of the group or organisation confer together or exchange information.

An outstanding example of a community media system is a grouping of amateur radio operators (often called 'hams') who regularly interact with each other. In many countries of the world these amateur radio organisations provide a reserve of specialised communications equipment as well as related technical and operating competence. In Canada, there are 13,000 licenced operators and many thousands more unlicenced ones. Their equipment ranges from mobile very-high-frequency (VHF) units with a limited range of a few miles, to world-wide capacity high frequency equipment. They even have their own communications satellite, Oscar 6. Many Canadian amateur radio operators handled emergency traffic to and from Managua, Nicaragua, during the 1972 earthquake.

'Hams' have proved to be a valuable asset in many disasters during the last decade. The US national Red Cross has organised operators into an emergency network. Citizen's Band (CB) or General Radio Service operators, who are usually grouped in urban areas and who have a limited radius for their transmitting activity, have been called upon by the police, municipal authorities, fire departments and other official agencies for various disaster-related tasks. In a recent Canadian blizzard, CB operators rode piggy-back on snowmobiles in a vital search and rescue operation. Certain frequencies have been authorised as emergency channels and these have been used as public information outlets when other communication systems break down.

However, such sophisticated technology is not found in most areas of the world and, from a global disaster point of view, amateur radio is about as useless as television : there is too little of it where it is needed.

3. Mass media systems

These are usually defined as broadcasting (radio and television), print (newspapers, periodicals and books), and film.

The table below shows that the growth in radio and television receivers in the developing countries over the last decade has been phenomenal. The growth of newspapers has been somewhat less, and cinema capacity has only slightly increased.

Units per thousand persons

Region	Radio receivers	TV receivers	Daily newspaper copies	Cinema seats
Africa	54 [23]	4 [Nil]	14	4
Asia	41 [20]	4	20	6
Latin America	171 [50]	68 [10]	62	22

Source: World Communications, 1964 and 1975 editions. The UNESCO Press, Paris, France.
Figures in brackets represent available statistics for the years 1960-62).

It should be borne in mind, however, that numbers of receivers or copies are not necessarily good indicators of use, as group listening and the communal use of newspapers is quite common, especially in Asia.

Despite dramatic over-all advances in the spread of the mass-media, particularly radio, large segments of the population in developing countries are still without real access, partly because of economic inequality and partly because mass media dissemination and content are usually aimed at urban rather than rural audiences. Even in developed countries there are considerable inequalities of opportunity. Although there are almost three radio sets for every person in Canada, a study carried out in an isolated and low-income area of Quebec found that 16 percent did not read magazines, 71 percent did not see motion pictures and 74 percent did not read books.

The same holds true within regions. The 1974 Asian Press and Media Directory gives the following list of newspaper copies (dailies and others) per thousand persons: Laos - 6; Cambodia - 22; Indonesia - 7; Burma - 9; Thailand - 24; Philippines - 35; Republic of Vietnam - 67; Malaysia - 74; Singapore - 201; Hong Kong - 485; and Japan - 511.

Other examples of regional discrepancy could be cited. In seven African countries there is no daily press except for mimeographed bulletins from government information services. In fifteen African countries there is no daily press at all and some African countries still send their periodicals and books abroad to be printed.

Variations within regions, countries and even towns is not the only factor to consider. Having access to radio does not necessarily mean that people can listen to it, as Egyptian authorities learned when they distributed radios to villages and discovered that in some cases they were being turned on only for religious ceremonies. Having a radio in one's possession does not make one an habitual listener, for there are various selective pressures which influence the amount and kind of media exposure. Moreover, having read or seen something does not automatically mean retention of that information.

Mass media are important, perhaps indispensable, for the public information aspects of disaster prevention. They are able to bring the same messages to vast numbers of people very quickly, and these messages can be understood by people who cannot read (through radio and television) and who may not have access to broadcast media (through film, audiovisual presentations and the photographs and illustrations of the printed page).

Mass media, like telecommunications, tend towards urban centres and follow distinct paths of development. The mounting pace of urbanisation can be seen in all parts of the world. In Latin America, it is estimated that 80 percent of the population will be living in towns of 20,000 or more by the end of the century, and evidence of urbanizacion del campo can be seen everywhere.[55/]

55/ United Nations.Department of Economic and Social Affairs. Growth of the World's Urban and Rural Population, 1920-2000. Population Studies, No. 44. United Nations, New York, 1969.

This urban trend may have some implications for mass media development. Urbanisation is usually followed by a rise in literacy and media growth, and it has been suggested that the spread of transistor radios and rapid transportation may be increasing media growth faster than appearances indicate.

The present growth patterns can be expected to continue, and mass media technology is expected to become cheaper and more pervasive. Mass media use for public information and public education purposes will follow this growth pattern as more and more people in the developing countries gain access to mass media outlets.

4. Future technology

Satellite development is likely to be the most talked-about disaster-related communications item during the next decade. One possibility is using satellites to activate hazard warning sirens at the local level. Another is satellite-computer linkage for various data management purposes. Another suggestion is to use satellites — together with aircraft and sea and land platforms — for a network of sensors to provide early warning of various kinds of disasters on a world-wide basis. There is also a proposal by the International Telecommunication Union (ITU) for a space radio communication system for aid following natural disasters: small portable transmitter-receivers would be flown to the disaster site allowing instantaneous communication anywhere in the world via satellite. In the area of disaster prevention, satellite imagery can be successfully applied to assess the flood-proneness of specific areas (mapping of flood risk areas). Accurate information about an entire river-basin or watershed can be obtained quickly from satellite remote sensing data for which lengthy surveys would otherwise be necessary. Various satellite educational programmes, such as those in India and Brazil, show promise for the future. One such is PEACESAT, a multilateral linking of ten locations in the Pacific via satellite with the capacity for telephone, telegraph and data transmission, used for conferences, teaching and research.

Portable transistor radios exist in abundance; what can be expected soon is a great quantity of portable transistor televisions. In fact this product already exists since a jeep-mounted, transistorised, television receiver has been produced that can be used in the most remote villages without an electrical power supply and is capable of displaying live television, kinescopes, videotapes and cassettes.

The relatively simple things are still being sought: an audio-visual projector which will show slides, movies and the printed page, play tapes or records, carry its own power supply, be simple to operate, and capable of being easily carried by one man; a small press which will print, fold and bind in one easy operation, which will convert local agricultural waste into paper stock, will run on a variety of power fuels or power sources, including manual operation, and which can be carried in the back of a truck.

VIII. WORD-OF-MOUTH

There are two principal ways in which information travels outwards through the human community from the point of origin (whether this is an official proclamation from the mayor's office, a policeman going from house to house, a public alert siren, or all the signs and portents of a forthcoming upheaval of nature.)

It can travel outwards in some mediated form, through the technological systems briefly noted in the last section, appearing and reappearing within the community as people turn on their radios, read wall posters or listen to public loudspeakers; or it can be passed from one person to another through word-of-mouth, sometimes mediated for stretches of time and distance by telephone, sometimes overheard as someone else's conversation, but always spreading outwards through particular channels in the community.

There is a need to know more about this kind of dissemination: what kind of information is sought and passed on? Who are the people who act as information centres along these channels from which other chains branch out? How can particular groups withing this web of information be identified? Finally, can this network be tapped for public information purposes?

1. Human communication chains

The nature of interpersonal communication is taken for granted by all of us, and has been well delineated in dozens of textbooks. The two-step flow concept of communication (that ideas flow from the mass media to opinion leaders and then to others) was introduced in a 1940 classic, The People's Choice. The two-step flow model has since been elaborated into a multi-step flow model through many stages, and public communication is now viewed as a complex, interacting system in which ideas come from many sources and in which mass media may appear and reappear at different stages.

Something about the effect of this interaction is known through studies on voting patterns, community decision-making and news-diffusion. It has become clear, for example, that the more important the event as perceived by those affected, the more active these human communication chains will become. During major events these unofficial channels can spread information faster and further than the official channels which are usually transmitted through the mass media. However, many of these human communication chains have their origin in mass media broadcasts, and the mediated and interpersonal networks can interact at many points. For example, people often check what they have heard on the mass media with someone else, or the reverse.

A study which traced these chains from person to person during a major community event found that almost half the community first heard from someone else.[56/] Seventy- six of these were traced along communication chains to the end point, as follows, each stage signifying another person in the chain: two stages - 35; three stages - 15; four stages - 9; five stages - 5; six stages - 4; seven stages - 4; eight stages - 3; and ten stages - 1.

The study suggests that information reaches people in a number of different ways, reminiscent of a multi-step flow model:

(1) through direct contact with the event as victims, participants or observers;

(2) through indirect contact with the event as interpreters of signs and portents;

(3) through mediated contact with the mass media;

(4) through mediated contact with other persons, by telephone, fixed-frequency radio, etc.;

56/ Scanlon, T.J. and Taylor, Brian. The North Bay Gas Explosion. Field Report, Emergency Planning Canada, Field Report 75/2, Ottawa, Canada, May 1975.

(5) through direct contact with other persons by word-of-mouth;

(6) through indirect contact with other persons by overhearing.

Similar studies carried out by the same group suggest that human communication during disasters follows an exaggerated form of normal behaviour. People first try to talk to others whom they live or work with, then people whom they know through various common interests and finally, if the circumstances exert enough pressure, they will speak to strangers and, generally, disrupt their normal communication patterns. The bulk of contacts in these human chains are between those living together in the same family, or people who work together or spend their leisure time together.

There are exceptions to these generalisations. The closer to the event itself, the more likely people are to talk to strangers and pass the news along to others. People who find themselves in various service categories — helping to fill sand-bags, digging out victims from the rubble, acting as volunteer firemen — are more likely to talk to people to whom they would normally not talk.

There are two easily identifiable ways in which information branches out in unexpected directions in the community. Quite different kinds of persons, with different sets of human contacts in the community, may belong to the same group (e.g., a union hall, church, mosque, sports club) where they regard each other as friends or acquaintances. They will share information. The other way is through overhearing, which happens all the time in many different circumstances. This means that persons gain access to information which they might not normally receive, and they then pass it on to their friends.

2. Extended family networks

Disaster victims turn first to the extended family for help. The smaller the scope of the community disaster, the more likely is the kin

group to be the major source of help. These conclusions were based on observations from some forty community disasters in Asia, Europe, North and Central America.57/

From two-thirds to three-quarters of the victims received relief and rehabilitation from relatives. Victims first seek aid from family members and close friends, then other friends and neighbours and, finally, they turn to individuals and groups within the community. This kind of pattern is almost identical for information-seeking and giving, which is also a form of help.

There have been many anthropological studies of kinship function and structure in primitive societies but relatively fewer in industrial societies. In fact, it is only recently that the developed world has begun to re-discover its kin structure. A recent article suggests that dormant kin relationships become active during disasters as the protective function of the family becomes heightened by anxiety. The fragmented nature of the kin group in modern societies may be useful in allowing help and assistance for victims outside the disaster area.

In areas of the world where disaster strikes most often, the inter-dependency of family members and the communal bonds of kinship — coupled with the diminished scale of government intervention — has meant that the extended family network is the pre-eminent avenue for all kinds of assistance, from warning information to recovery and rehabilitation. In southeast Asia, for example, the primary conveyors of community information, who are also persuasive agents of social change, are relatives, neighbours and friends, who usually overlap because of in-group marriages.

57/ Quarantelli, E.L. "A note on the protective function of family in disaster", Marriage and Family Living, USA, August 1960.

3. Community settings

In traditional societies there is a deep and underlying sense of community. Everyone knows where to turn for advice, encouragement and help, and they also know what they are not expected to do, or where not to go. Normally such tribal communities are self-fulfilled and it is only when the whole structure is demolished that people do not know where to turn for aid.

Modern societies are fragmented into many tiny communities, though these can merge into one large community if there is enough outside pressure, such as in wartime or when a disaster occurs. During the first days after the 1953 floods in the Netherlands, "on the roads, in streetcars, trains, everywhere, the subject of conversation was the disaster. Strangers spoke to each other and exchanged information. Emotions were not only expressed in speech reactions but by deeds. Everyone was prepared for action".

The community is an extension of the individual and the market place for the giving and taking of public information. Knowledge of the community will help in setting up and running efficient public information and education programmes. The models to follow are any movements of social change which use the community to change itself: rural agricultural development, for instance, or population planning in the cities.

A recent book includes a description of the Mothers' Club in the small South Korean village of Oryu Li, and how the club used communication for development under the leadership of Mrs. Chung Moon Ja : how the information was used to solve social and economic problems of the villagers through their own hard work. 58/

58/ Dissanayake, Wikal, quoted by Syed A. Rahim in "Communication Approaches in Rural Development", Communication and Change: the Last Ten Years and the Next, Schramm and Lerner (eds.), University Press of Hawaii, Honolulu USA, 1976.

The work also includes a description of the Comilla project in Bangladesh which, under the leadership of Akhter Hameed Khan, managed to provide a communication link between government officials and the villages which, eventually, led to family planning, re-invigorated agricultural co-operatives, teachers and trained agricultural extension workers.

These and other similar innovative examples use communication for community development as part of national development. Public education aimed at disaster prevention and mitigation can be a part of that same effort, for many Comillas are needed to balance the cyclones of Bangladesh.

4. Use of folk and folk media

The use of traditional or folk media, especially in rural communities, can be an effective part of a disaster prevention public education programme. They can be used for conveying disaster warning and preparedness messages — such as what to do if disasters strike — so long as the artist is allowed to translate and dramatize the message in terms that his audience will understand.

An author who has been associated with the use of traditional media for such purposes in India, Indonesia, Pakistan, Malaysia and Sri Lanka warns against any assumption that this is easily done: "The most judicious course of action would be to make no fundamental changes in the content and structure of traditional media, but rather to use their forms for the transmission of modern messages". 59/

The kinds of folk media that can be used for these purposes are many and varied: the calypso has been used for social comment in the Caribbean; the story-teller, the shadow-play, and the dance have been used in southeast Asia; the drum is an age-old African instrument of warning; the

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59/ Dissanayake, ibid.

ballet has been used as an instruction vehicle in China, and painting and music have been used for the same purpose in the USSR. The list continues through printed media — the leaflet, brochure, wall-sheet and wall newspaper and on to other areas of folk behaviour: graffiti, songs, street-games, street entertainments of all kinds, arts and crafts, even that which is worn, eaten and lived in can be decorated to some purpose.

Any communication programme aimed at the rural population will normally be a vertical flow structure, from a relatively small group of people planning and implementing the programme to a large mass of the population participating in and benefitting from the programme. Messages are usually of two kinds: exhortative, which justify collective action and create social solidarity, and informative, which increase awareness, interest, knowledge and the capacity to make rational decisions.

The main channels will be mass media, folk media or interpersonal. The interpersonal channels are decentralised and the messages flow as people talk to each other or exchange written statements. The main channels within the rural population will be (a) individual families, (b) village communities and groups, (c) other kinds of community groupings.

The community development programme in India has been described as one based on the assumption that the great mass of illiterate and poor rural population is a highly valuable human resource. Individual rural families and communities can be shown how to deal with the forces of nature if they are given practical knowldge of what can be done. The government has the responsibility for bringing together the forces of this rural mass and the technology. This can best be done by a decentralised interpersonal communication system. In the case of India, the trained village-level worker is the key communicator.

Local leaders and local voluntary organisations in the villages can become effective extension agents. They can make better use of the interpersonal communication and influence network in the village

communities than government agents who are unaware of local conditions. Peasants can also be organised into co-operatives or associations, and organisation leaders can be trained to do extension work using these groups. This method is used in the animation rurale programmes of Senegal, the Ivory Coast, Benin and Togo.

IX. MESSAGES

The preparation of public information material requires care in several sensitive areas. One of these is the question of bias on the part of the production team: language bias, class bias, political bias or cultural bias. There are others which might be added to the list, for example, the penchant for technology in some regions of the world is often expressed as a technological bias.

The production team must assume that they have their own sets of biases, and they should meticulously examine public information material to make certain that it does not contain bias which is antithetical to the audience they are trying to reach. There is a strong argument for materials to be produced nationally, or even regionally, or for using nationals from a particular country when adapting material from an international prototype.

This is particularly true when looking at content of information material (including choice of layout and illustrations when dealing with print). It also applies to the code which is used in phrasing the content. If content can be said to express ideas, then to codify it is to set it in written, aural or visual language which can be easily understood by the intended audience.

For example, both content and code of mass media messages are generally oriented to an urban audience because rural peasants are not usually a profitable market, because mass media facilities and personnel are usually urban in nature, and perhaps because of a class bias in favour of the urban rather than the rural life.

Public information practitioners must be particularly aware of the content and code which is most suited to the audience they are trying to reach, and should go to great pains to model the message along the most suitable lines. Usually, rural radio provides an excellent model because it has been especially shaped to fit into the ideas, vocabulary and context of rural listeners.

All of this might be expressed as part of message strategies (see section 1). Having produced this material it then has to be disseminated by various means to special or general audiences. There are many traps lying in wait for the unwary official who merely puts his product into the mail, on tape or on film. Getting it broadcast, or printed, does not necessarily mean it will be heard or read. There are many 'gatekeepers' lying in wait along the dissemination trail, and having reached the reader, listener or viewer it still must bypass the double trapdoors marked 'selective response' and 'selective retention'. All of this might be expressed as 'diffusion' (see section 2).

One way of disseminating material (or diffusing ideas) is verbally through the human communication chains discussed earlier. Because the information has to go through so many persons it is particularly liable to distortion and to the emergence of mis-information or rumour (see section 3).

The message having finally reached its destination, it is then necessary to know whether it did its job. Was there an increase of knowledge, did something happen, have we safeguarded people from some future event, or successfully warned them of some particular peril? What can we do next time to improve the product and its performance? These questions are examined in section 4 of this chapter, evaluation of effectiveness.

1. Message strategies

Not much research work has been done on testing disaster information material to find out whether changes in code or content might make it more effective. Most of the time this has been handled pragmatically by field-testing messages with sample audiences. The US Office of Civil Defence funded a series of message strategy experiments in the late 1960s which searched the available literature and then tested these earlier studies. They were concerned with the placement of structural elements of the message to find out which arrangements were the most successful in improving comprehension. Some of the tests and conclusions were as follows:

(1) Context order of organisation vs. comparative order (i.e. dealing fully with one item before going on to the next, or comparing the various items point-by-point); it was found that comparative order increased comprehension more than the contextual order.

(2) Neutral introduction vs. conclusion-drawing introduction; very little difference was found between the two.

(3) Placement of source early in message vs. placement late in the message; it was found that it made no difference where the source was placed, though testing over a longer period of time showed that placing the source early lead to more comprehension than placing it late.

(4) Quantitiative presentation of facts (using statistical tables and charts) vs. textual interpretation of these facts; it was found that there was little difference between the two approaches.

(5) Use of 2nd person pronouns as compared with 3rd person pronouns; no difference perceived.

(6) Should the emotional appeal at the end of the message refer to the reader himself, refer to 'the good of your family' or refer to 'the good of society'; no clear conclusions were reached.

(7) Deductive vs. inductive ways of explaining key points (i.e. starting with the main point and following with supportive evidence, or examining all the evidence and then coming to a conclusion) - it was found that the deductive approach was slightly more effective. It was also found that a message with an explanation was more satisfactory than a message without explanation.

Recent studies in the allied field of public information for national development are more useful. These show that print and broadcast media do not cover the subject adequately, particularly when dealing with sensitive areas.

Messages for rural audiences generally fail to make adequate use of familiar words, phrases, settings and characters, illustrations with adequate explanations, rural dialects peculiar to various geographical regions, and attractive formats that would make them appealing to farmers and their families. The messages also fail to project deeply-felt rural values, such as respect for the aged and for authority, filial ties, value of children, family solidarity, and others.

These releases tend to concentrate on technical considerations at the expense of social, economic, cultural or environmental factors. The thrust of the message is often inconsistent with the prevailing needs and the low levels of knowledge of the intended audiences, and they are seldom co-ordinated with other information.

These findings demonstrate the need to pre-test messages. Although this pre-testing does not have to be carried out under rigorous time-consuming conditions, it should be carried out with a sample audience which includes distant geographic areas and minority cultures which lie within the target audience.

A good example of a deficient warning message occurred in a city in Mexico which was about to be inundated. Two loudspeaker units are said to have cruised the streets for several minutes repeating the following message: "An all-time record flood is going to inundate the city. You must evacuate immediately. (Pause). The theatre is presenting two exciting features tonight. Be sure to see these pictures at the theatre tonight." It is an absurd example of the way in which messages can be contradicted, devalued or cancelled out by additional messages which may become part of the original message in the minds of the listener.

2. Diffusion

Various delivery patterns can be discerned in the evaluation-dissemination-response warning systems used by emergency measures or civil defence organisations:

(1) Open broadcast - messages transmitted from a central source, a radio station, for example, without provision for interaction or feedback.

(2) Two-step flow - in which messages are delivered to community opinion leaders, or 'gatekeepers', who pass them on to those they represent.

(3) Selective individual delivery - in which messages are sent to selected persons at work or home, by visits, telephone calls, mail or within special circumstances like training courses.

(4) Vertical group delivery - in which people are gathered together in one place and are informed by political speeches, loudspeaker addresses, film or audiovisual projections, displays or exhibits. There is usually no feedback from the audience in this method.

(5) Version of this which allows interaction and feedback, such as discussion meetings, rural radio forums, demonstrations, film viewing groups and talks.

(6) Horizontal dialogue - in which the people themselves generate the ideas and become the audience for an interaction moving towards some community purpose.

(7) Two-way vertical dialogue - in which there is a personal encounter between the community and some informed person, such as a government minister or municipal official.

(8) Upward version of this vertical dialogue - in which the people themselves come to decisions and pass their messages upwards through various formal or informal channels.

(9) Feedback testing method - in which messages are exposed to a sample audience, changed and further tested in a series of manoeuvres which finally reaches the target audience.

(10) Central collection system - in which messages are sent from many different places to one central source, where they are processed and transmitted outwards through different channels.

There are undoubtedly many other delivery patterns at work somewhere in the world beyond these listed. Public information officers must keep in mind these many options in trying to decide which delivery pattern best suits a particular situation. There is no universal solution.

Literally thousands of diffusion studies have emerged over the past few decades. During the 1970s the classical model of diffusion came under sharp fire from researchers in developing countries who wondered if it was really contributing anything to people in Asia, Africa and Latin America. For example, European and North American communication research is usually preoccupied with the effects of mass media but researchers in the developing countries have found that interpersonal channels are much more important.

There is a new era of diffusion inquiry which takes into account the social context and which should, in time, give new findings which can be used in public information work.

In the field of agricultural innovation, for instance, it has been found that:

(1) Most rural people have some difficulty in identifying and choosing options open to them, in relation to the resources that they have, or might reasonably expect to obtain;

(2) Many rural people have difficulty in expressing their needs and preferences - the tools of the urban world are often unfamiliar to them;

(3) Few groups in a low-income society are in a position to have their views taken seriously at higher levels of government.

The agricultural innovation approach now includes various steps to help solve these problems, such as training rural people in communication skills;

developing feedback mechanisms; educating large numbers of people through the mass media; 'consciousness-raising' of community leaders; assisting rural organisations and spokesmen; and supporting autonomous local media, like community newsletters.

These are all ideas which could well be adopted in any large-scale education programme aimed at generally informing the public about disaster prevention and mitigation. Paraphrasing the aims of agricultural innovation, three questions should be answered:

(1) How can messages about disaster prevention and mitigation be made more persuasive and brought more fully to the attention of the man on the land?

(2) What channels of communication will best bring together the contributions of various public and private agencies in attaining this aim?

(3) What communication channels and devices will help the public most affected by disaster to clarify their alternatives, organise their resources and make those outside of their community aware of their needs?

3. Rumour and misinformation

There have been very few studies of rumour during disasters, though it is generally agreed that verbal reports of destruction and death may increase apprehension and anticipatory fear in non-victims. There have been several reported cases of this kind from World War II when an untouched community was deluged by an influx of refugees from a heavily-bombed city.

A recent issue issue of Mass Emergencies [60] carried a detailed analysis of several human communication chains involving a rumour (about a child

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60/ Mass Emergencies, Vol. 2, 1977.

being killed as a result of a severe windstorm, though in fact she was slightly injured). The study suggests several hypotheses:

- rumours are normally passed between those of the same socio-economic status;
- rumour-passers are not normally concerned about the importance of the information to them;
- rumours are levelled, sharpened and assimilated as they are passed along;
- rumours sometimes have a specific source;
- rumours rarely break sex-lines except where persons in the same families are involved;
- rumours are not normally carried across language barriers.

A number of studies suggest that the mass media create, or pass along, inaccuracies, mis-information and, occasionally, rumours. Media coverage of several disasters showed that news organisations were generally quick to respond to crisis events but their stories were likely to contain errors and inaccuracies of detail. Early reports were usually the most incomplete. Media often had trouble establishing estimates of casualties, property damage and the numbers of people affected, but specific facts and figures were nonetheless often reported. Inaccuracies in the text are often made more dramatic by the use of headlines and captions which reflect this misinformation.

How misinformation may become dangerous rumour is demonstrated by this example. When 'Hurricane Diana' hit one of the eastern US towns, the population was anxious and uncertain about a huge dam poised above the town. The chief of police issued a statement that the dam gates were being opened to relieve the pressure. This was meant to reassure people but it was interpreted as meaning that the dam was about to break and rumours circulated that it had already broken. The fire captain phoned the fire station to check on the rumour but when other firemen heard this message they assumed it was true and drove their firetrucks through town with sirens wide-open shouting orders to evacuate the town. A large proportion of the inhabitants fled in panic.

4. Evaluation of effectiveness

Considering the amount of information that is launched upon an unsuspecting public and the professed desire of practitioners for feedback, it is surprising to find out how little is known about the effects of what is done.

In a paper on evaluating mass media campaigns, the following statement appears: "No one knows better than the public information officer the importance of accurately evaluating the effects of his communications programme on the strength of bits of information culled from fan-mail, unofficial informants and other fortuitous sources". The writer goes on to say that it is now possible to obtain comparatively reliable, objective and accurate information on the effects of media through the use of general research techniques developed in the social sciences.

It is true that there are thousands of content analysis studies on file, but there is still no objective standardised reporting on effectiveness from the field; another is to set up pilot projects and concentrate evaluation on this small-scale programme before moving to larger campaigns.

What more often happens is that there is an effort to answer subjectively a list of questions, such as

-- Was the programme adequately planned?
-- Did those concerned understand the job that had to be done?
-- Did all affected departments and administrators co-operate?
-- How could the results have been made more effective?
-- Were the pertinent audiences reached?
-- Could better provision have been made for unforeseen circumstances?
-- Did the programme stay within the budget, and if not why not?

and ironically,

-- What provisions were made in advance for measuring results?

Three ways of measuring impact of public information programmes have been suggested: through an experimental study matching an exposed group and a control group; through a sample survey; and through a panel study in which the same group of people are interviewed over a period of time. Three approaches for determining media effectiveness can be mentioned: coverage analysis, by surveying audiences; response analysis, by recording reactions to programmes, or by trying to relate programme content and individual reactions during intensive interviewing; and process analysis, by trying to model the various steps in programme dissemination.

These and other techniques are discussed in many of the communication texts which have appeared over the past few years. One such text contains chapters on content analysis, interactional analysis and stylistic analysis, attitude scales and rating scales. These kinds of research can be done by staff members trained in social science techniques, or by experts, consultants or commercial research services. Unskilled persons can be trained to undertake evaluation.

It may be that these research approaches are too costly, erudite, small-scale or irrelevant to a particular programme. But at least the following four questions should be asked and the answers should be as impartial and factual as possible.

(1) Audience coverage — how large is the audience, is it representative of the population it is desired to reach?

(2) Audience response — do messages have the effects desired, do people react favourably or unfavourably?

(3) Communications impact — will the audience remember these messages and act accordingly under appropriate circumstances?

(4) Process of influence — how effective is the programme in influencing the opinions and behaviour of the general public; through what channels and mechanisms is this done?