nue to perform in the customary manner if income was stopped and if no one paid any attention to him or what he is doing. In general, the sorts of incentives or reinforcers mentioned in the section on *Recruitment* will work for most people. In addition, personal rewards like the sense of achievement, the development of coping behaviour and self-confidence, the acquisition of saleable skills, and satisfaction of curiosity are important to many individuals.

While positive incentives are essential to maintain motivation, cost factors must also be handled or interest and motivation will fall off. In addition to cost factors mentioned in the last section, there is a special cost factor to which participants in emergency organizations may be subjected, namely, social harassment. They may be the butt of kidding, sly glances, remarks to the effect that they are scared, foolish influence and power, and they may find themselves being socially isolated in various ways. Members of our society are inclined to react in this manner towards new groups and movements, especially when they are not understood or if they arouse some apprehension. Such attitudes are only overcome when the movement includes appropriate status persons or a significant proportion of the population, or demonstrates functions which are relevant to the needs and concerns of the population.

This phenomenon and process was exhibited in Great Britain prior to and during World War II. Civil defence services were organized, right down to street wardens, some three years before the war. However, before the outbreak of hostility, wardens had come to be regarded with indifference at best and were also the object of some amusement, suspicion, and harassment. When the bombing started their careful selection and instructions quickly paid dividends: wardens faced danger without flinching and often ignored their own safety, they cared for the welfare of the people on their street, and they became the good neighbour and leader of their local districts. The attitudes which developed towards the warden are illustrated by the following quotations:

> ...In one household...When the siren went a wife asked her warden husband, as he put on his steel helmet, 'Don't we come first?' There followed, as he said, a spot of argument' until his little girl said, 'shooks, Mummy, let Daddy do his stuff.'[4]

A women warden reported:

> When sirens went and it was bad, if they couldn't hear my voice they used to get a bit panicky. When they heard me they were alright. They'd say, 'We can't hear B. – it must be bad'. Then I shout from one end of the street to the other, telling the children to get inside. That was my one consolation: Whatever I said was right, and the people would always do it. (ibid, p. 146).[5]

There are three ways to meet harassment. First, members of an organization should be pre-selected on the basis of their status and respectability among their fellows. This will not always be easy, because it is also essential that they have those skills and personal qualities which would enable them to be competent in a particular role within the organization. Second, they should be able to point, in concrete and relevant terms, to the opportunities and rewards which membership offers. Third, indifference and negative attitudes will dissolve if organization members demonstrate the value of their preparation and training in individual, family and larger emergencies. Any emergency measures program will ultimately be justified and acquire a positive image only be demonstrating its relevance and worth in concrete situations. This is one of the advantages of focusing on small emergencies and natural disasters—it provides the opportunity to justify the program and build a positive social image.

Maximizing Learning. It is not only important to maintain a high level of participation in an organization's program, it is also essential to use methods which will maximize learning. Three principles are important in this regard: the use of *reinforcement, appropriate presentation of information and tasks,* and *practice.*

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[4] From *Front Line: The official story of the Civil Defence of Great Britain.* British Information Service. London: H.M. Stationary Office, 1943. p.144. Used by permission.

[5] ibid, p. 146.

(1) Reinforcement is the first principle of learning. It involves the provision of positive feed-back and consequences for correct responses and negative consequences for wrong responses which are to be eliminated. The effective kinds of reinforcers are: (a) Information—that the response was right or wrong; (b) Positive consequences—in the form of social recognition, material rewards, special privileges, and so on; and (c) Negative consequences—in the form of loss of attention, of points, or some other symbolic value. The administration of the appropriate feed-back should be carried out in a natural and spontaneous manner, and with due consideration of the circumstances and the sensibilities of the individuals involved so that it does not produce negative reactions on the part of trainees.

(2) Appropriate presentation of material and tasks to be learned is the second principle for maximizing learning. There are two guides here. One is to start from where the individual is now, in terms of his personal experience and his presently available knowledge, skills, and behaviours. This is to say that information should be conveyed in words and language with which the individual is already familiar, that explanation of electrical circuits should start from simple ideas and phenomena of which the individual has some knowledge, and that medical information should be first conveyed in terms of what the individual has already experienced and learned. In terms of manual and other performance skills, the idea is to use those movements which the individual can already execute.

The second guide in presenting tasks or information to be learned is to elaborate the initial information or skills in a logical sequence, by successive approximations, and at a rate which the individual can absorb. This is to apply some of the principles used with teaching machines. Indeed, teaching machines may be very useful instruments for learning in certain phases of the training program, for instance when the language of a new area or technology is to be required. However, these should be used with caution because they may produce boredom and loss of motivation in some cases, and they often do not provide sufficient opportunity for the individual to stretch his mental muscles and grasp the whole principle or integrate several aspects of a problem with one insight. The problem is to program the sequence of information and tasks with the appropriate mixture and balance of gradualness and stretching. It may be wise to procure the services of psychologists or educationalists with special training in the area of learning and instruction. To illustrate what may be done, psychologists have been able to teach rats to "play" table tennis, to train pigeons to function as quality control "inspectors", to "educate" chimpanzees to do simple binary arithmatic, and to teach university students in such a way that very few get less than B grades (Goldiamond, 1965).

The traditional methods of teaching with lectures, seminars, group discussions, films, and case studies will still play a major part in any training program. Studies in which these methods have been compared have not clearly demonstrated that one is better than another. If improvement in the learning process is to be effected, the tactic is to arrange appropriate sequences within and between those methods on the one hand, and to require a high level of active practice by the appropriate use of motivation and reinforcement on the other.

A new method for teaching and training is "games with simulated environments" (Guetykow, 1962), and preliminary results of a study by Inbar (1965) indicate that the method may be very effective in training people for disasters. About eight players are seated around a table with a schematic map of a community on it. Each player is given a role in the simulated community together with his location at the beginning of the game, his job, his relatives and friends in the community, and eventually certain obligations and interests in the community. Players have pawns which they can move according to specified rules, and they "spend" energy units on the one hand and accumulate anxiety points on the other. Players may not communicate with one another unless they establish a line of communication on the board. The director of the game centralizes all moves on a special board. To start the game, players are told that a disater has occurred in an unknown part of the community. The question is, what would they do.

Experience with such games indicates that they are powerful means of involving players in a problem in a very realistic way: they motivate, produce emotional reactions, lead to insights, and stimulate a sense of responsibility. Of the 256 players tested by Inbar (high school students, 4-H Club members, and managerial candidates), 83 per cent found it realistic or very realistic. The following is a sample of subjects' comments:

> This game should be played by every citizen in the world. It gave us an opportunity to relive a situation which we may be faced with every day or someday in the near future.
>
> *Very good.* It would like to take this back to Colorado. It would show people just what would happen in an emergency.
>
> It was the best method of presenting this subject that I have ever attended.
>
> We really experienced the panic and confusion of a catastrophe.
>
> I thought it was very true to life in that much of what we have done in this game was basically the same as was done last June in the floods....
>
> This all could have actually happened: although we don't hold these positions, we can realize what tremendous effort it takes to run them. I know now that people have to be organized if anyone expects to get anything accomplished.
>
> It showed how everyone's first thoughts is for himself and how we should work for a community effort in order to accomplish more.
>
> This shows problems that arise in a state of emergency: lack of organization, lack of a planned program.[6]

The majority of the subjects in the game learned some of the basic problems in disaster. The next step would be to allow them to prepare for an emergency by requesting certain agency and material ressources and specialized training, then test their preparedness in another version of the game.

(3) Practice is the third main principle of learning. Practice is vital for most forms of learning and performance, and most people know what it means. However, there is one variation of the practice method that enhances its value, and that is practice with correction. For example, in learning a lesson the idea is to go over it until you think you know it, write it out to test your learning, check for errors or omissions, then if it was not *completely* correct, write it out again. The same technique can be used in playing trainees work up a problem and present it orally: if there was any room for improvement in the oral presentation, schedule it again. Practice—also called rehearsal—points up problems, lack of understanding, gaps in knowledge and skills, and provides the opportunity to remedy these before going on to the next phase.

Practice is extremely important for the development of coordination and organization on the social level. To function as a smooth and efficient organization, the members of a group have to learn to behave in a predictable manner and to give others the appropriate cues so each knows what to expect of the other. Only by this means can their behaviour be coordinated and it usually takes considerable practice. Professional wrestling illustrates such social coordination. On a larger scale, and especially for emergency orga-

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[6] From *Dissertation proposal on a game simulating a community disaster and its implications for games with simulated environments.* Department of Social Relations, The John Hopkins University, 1965. pp. 21-23. Used by permission.

nizations which must deal with unpredictable disaster conditions, practice drills are essential, on small simulated problems and on a community-wide level.

Finally, it should be emphasized that each of the three principles of training cited here, reinforcement, presentation of information or tasks, and practice, is quite useless without the other two. Thus a training program must pay adequate attention to all three.

Organizational Preparation for Disaster

The main overall problem in disaster and in large scale emergencies is that the existing social system is severely disrupted, to the point of collapse. Survivors are stunned and dazed, disorganized or preoccupied with their immediate personal and family problems, and there is little coordination of efforts in handling these. Most studies have shown that even those persons and agencies whose training and role is to deal with emergencies get caught up in the confusion and urgency of a multitude of individual needs. This is nearly always the case with agencies from the impact zone, and even those which move in from outside typically have great difficulty in operating in an organized fashion. Thus priority objective of preparation and training for emergencies is adequate organization of the personnel and groups who will be responsible when disaster strikes.

Coordination of Services. A well organized operation requires coordination of agencies and personnel in carrying out the tasks at hand. In the case of emergency measures, this means integration of the efforts of the emergency, welfare and protective organizations of a community with appropriate division of labour and responsibility. Coordination between such groups is often woefully lacking—as illustrated in Chapter 4. It must be planned and rehearsed to be effective.

There are good reasons for drawing together and using existing emergency and service agencies in emergency measures organizations. They have personnel and ready-made organizations for dealing with particular aspects of disaster conditions; many of them have had considerable experience with various emergency situations; and most of them have required some authority in the public mind in their particular roles. However, the integration of such agencies in one overall organization will present difficulties. Existing emergency and service agencies have a life and identity of their own, and they will be loath to lose these in a merger. They will be apprehensive lest the functions on which they have built a tradition of service, which have earned them social respect, and for which they are justly proud, be divided up or taken over by other groups. The morale of personnel is intimately associated with their organization's history and tradition, and its unique roles and functions. When these are threatened, personnel may experience uncertainty and loss of morale. The unit organizations may be uneasy about their ability to recruit and hold new members if they become a mere part of a larger organization. Those that are largely supported by volunteers and financial contributions from the public may be concerned to maintain their image in order to retain such support. Unit organizations may misunderstand one another and clash because of their different structures, values, and objectives. There may be competition for influence and power, for prestige and the public. Jealousy and resentment may flare up between the "professional" and the novice, as unit agencies have doubts about the ability and competence of the new overall leaders. Finally, the leaders of the unit agencies will have a particular vested interest in maintaining their organization as a separate and identifiable social unit, because of the status, authority, and influence they have by virtue of their position in it.

The first step in dealing with the reservations and concerns of existing service agencies is to accept them as genuine, as based on real and legitimate fears. Then these may be discussed frankly, examined in detail, and means of meeting them explored in a spirit of mutual understanding. It may be quite feasible for an agency to retain the essentials of its identity and social image, perhaps in clearer focus, by concentrating on its main functions and not spreading itself too thin. In exercises and emergencies, each agency can be given special recognition within the overall organization and in the eyes of the public at large—it would be legitimate for the general director to publicize the role and contributions of unit organizations, whereas

the latter can hardly do this themselves. Moreover, an individual's organization's identity is often enhanced by being contrasted with the characteristics and functions of others. Such contrast, and appropriately planned competition for excellence, can contribute to the morale of personnel in the different organizations. Recruiting may be made easier by having selected and more sharply defined jobs and roles, and there could be reclassification and placement from unit within the general organization. In discussions and in exercises, different units can learn to appreciate one another, their values and methods in the light of their particular jobs. The informal and family-like structure of the Salvation Army with its accepting and benevolent attitude may be seen as appropriate to the kind of relief it offers, and the more authoritarian structure and stance of the police or army as suited to their control and protection role.

Problems of leadership may be especially difficult, but should yield to an approach that emphasizes consideration of the individual, his position and needs, together with the common overall objectives. Leaders of existing organizations should usually retain their leadership position. Their role may be expanded by drawing them together into a kind of directorate for the overall organization, where they could play an important part in planning, directing, and as consultants in determining policy and selecting executive officers. Another important problem which is often neglected is that of equitable pay and compensation for participation and service. This would have to be worked out in detail, with adequate consideration of the differing structures and values of the unit organizations.

Integration of services is always a difficult business. However, it can be accomplished without too much disruption if it is recognized that no one person or organization has a monopoly of competence, of the "best" means, or the most important functions; if due consideration is given to individual needs for recognition, status, and influence; and if there is adequate communication and consultation. Then the manner in which operational integration is attained will depend largely on collaborative planning and joint exercises. The role of joint exercises cannot be overemphasized. This turns up gaps and problems in planning, communication, lines of authority, and coordination. Exercises test the ability and competence of individuals and organizations, and they may be used to give recognition and to enhance morale. Finally, when individuals or groups become active in handling concrete problems and working toward common objectives, interpersonal differences often fade into the background.

The manner in which responsibility and tasks are allotted to unit agencies within an integrated organization should be guided by the priorities of the situation, and may cut across some of the traditional conceptions and roles of individual agencies. For most disasters, especially large-scale and nuclear ones, it would be desirable if reconnaisance and communication teams moved in first, with the specific purpose of determining the needs and problems, and of setting up a communication network with control posts and a field headquarters. The second wave might consist of rescue teams and firemen whose function is to carry out rescue, first aid, movement of casualties, and search tasks and to handle secondary threats from things like fire and broken gas mains respectively. The third phase of emergency assistance might then consist of moving in and establishing emergency health and welfare services. Such a phasing of the operation would facilitate the processes of caring for victims and establishing order and control. However, to implement an operation like this might well call for the integration of personnel and special groups from different agencies into the appropriate teams. This can only be accomplished by planning and rehearsal.

An important principle in the provision of organized assistance in disasters is that such assistance must usually come from outside the impact zone. Nearly all studies of natural disasters in North America indicate that survivors in the stricken area are practically unable to establish some overall organization for emergency measures. This would undoubtedly be the case in the event of a nuclear disaster. It follows that emergency organizations must be prepared to move into adjacent areas. Such an operation will be greatly facilitated if members of the organization are familiar with the physical and population characteristics of adjacent areas, have personnel and working acquaintance with emergency personnel there, and have practiced such a move in realistic exercises.

Authority and Responsibility. The problem of authority and responsibility in disasters is more than an academic question. In Canada, overall authority is vested at all times in the elected representatives at the three levels of government, national, provincial, and municipal. This is consistent with our democratic system. However, it places grave responsibilities on such officials; they may not be prepared for such responsibility, and people do not always respond to an authority simply because authority has been assigned.

Elected civic officials are usually chosen on the basis of qualities and experience which is far removed from the problems of disaster. Nevertheless, they will be responsible in the event of a disaster, for making decisions and directing the operation. However busy and preoccupied they may be with day-to-day matters of civic government, they must learn about and become familiar with and work with emergency plans and organizations. While they would in an actual disaster presumably work very closely with the director of the local emergency measures organization and rely on his advice for operational decisions, they must take responsibility for being fully informed and prepared for emergencies.

The other difficulty with elected representatives as the authority in disaster is that people have not acquired the habit of looking to them in most of the emergency situations they have experienced. Rather, they tend to look to that agency which typically handles different kinds of emergencies in community life. In the case of fire, they call the fire department; if their property or person is threatened, they call the police; and at least in the United States, they often look to the Red Cross as the ultimate authority in disaster because the Red Cross has developed this image through its history of work in such situations. The implication of all this is that designated authorities must develop and earn the appropriate image of authority and credibility in the public mind. Moreover, they must warrant this image in the eyes of the units and personnel of emergency organizations.

Communication. The crucial factor in the development and functioning of an effective organization is communication. Coordination and authority cannot be maintained without adequate communication. The technology of communication is available, but the human element is often given insufficient attention. Channels of communication should be specified together with the kind of information which will be transmitted. Messages should be acknowledged. There should be provision for the sorting, storing and re-transmission of information. Finally, there should be adequate opportunities for informal communication, especially when the organization is in the developmental stage and when personnel are not on the alert. Efficient communication requires planning and rehearsal like any other complex human endeavor.

Plans and Information

Any program of preparation for natural or nuclear disasters must include adequate attention to the collection and appropriate dissemination of three kinds of information: information on operational plans and procedures, on available resources of personnel, material and facilities, and on recommended protective behaviours. Without these kinds of information a community's response to disaster will be much less effective, both on the organizational and individual level.

Operational plans and procedures should be worked out in detail and be available to civic authorities and unit emergency organizations and personnel and to key personnel in other organizations that may have a role in disaster. The plan should be more than just a paper plan; key personnel should be familiar with the plan by study and by practice drills. It should include detailed information of the second kind, namely, that based on an inventory of available resources of personnel, supplies and facilities.

The manner in which an adequate plan for disaster can reduce the destructive consequences was illustrated when the strongest earthquake in 40 years struck the city of Niigata in Japan in June 1964. Over 17,000 houses were damaged or destroyed, almost all public utilities, means of communication and transport were completely disrupted, over 50 per cent of the land area of the city was flooded to a depth of 3 to 5

feet, 11,000 buildings were inundated, and one half of the population of 300,000 was directly affected by the earthquake, the floods, or the fires. However, only 11 persons were killed and about 120 injured.

The minimal consequence of this disaster, in terms of casualties, was probably attributable to the fact that a detailed master plan for disaster was available and well known (Quanrantelli, 1966). Japan is a country which has been subject to recurrent disasters. In the period 1951-1961 over 13,000 people were killed, some 450,000 houses destroyed, and over 5,000,000 homes flooded in 11 major typhoons and floods. As a result of this experience, the country has an elaborate disaster plan for all levels from the national to the local. Organizational division of labour is specified, usually along the lines of the tradional tasks of each organization. The activities of each organization are detailed, right down to the banking facilities which will be used in a disaster. As a result, there were few emergent groups and no problem of emergent and conflicting authority groups. There was no conflict between civilian and military authority, the former maintaining control throughout—although thousands of military personnel became involved in emergency measures. The master plan is detailed in contrast to most disaster plans in North American communities, which only offer general directions. Provision is made for the possibility of different kinds of disasters and emergencies. There are master lists of the amount and location of potentially needed equipment and supplies. The manner in which emergency actions are to be carried out are detailed, including how information is to be collected, stored, dispatched, and to whom. There is relatively little general convergence from the outside, and when people did come in, they typically worked within the framework and under the auspices of local organizations. Finally, there appeared to be wide-spread knowledge of the plan before the disaster.

The third kind of information which is an integral part of preparation for disaster covers the kinds of protective behaviour which are indicated in different situations. Such information would be especially important in the event of a nuclear disaster. In view of the many misconceptions about nuclear hazards, such information should be simple, concrete, and consistent. For example, the following facts should be widely publicized: That a person cannot "catch" radiation sickness from another, that most fallout rapidly loses its power to harm people, that you can see fallout, and that exposure to radiation does not necessarily produce sickness and death. The Canadian Department of Agriculture has booklets on protective measures with regard to food, water, plant life, and livestock. Publication lists of booklets and films are available from National and Provincial Emergency Measures Organizations, from the Canadian Emergency Measures College at Arnprior, Ontario, from the Department of National Health and Welfare in Ottawa, and from Provincial Departments involved in emergency planning.

Conclusions

This book would be incomplete if it stopped at this point. A central problem in dealing with emergencies, small and large, is that of developing a set of overall plans. This calls for more specialized information on the one hand and for social decisions on the other.

Every citizen has a responsibility to study the issues which face his society and nation, to collect as much relevant information as he can, to evaluate that information and make a judgement on it. However, the average citizen is seriously handicapped in many respects. He does not have access to much information, he is not always in a position to formulate an opinion and make decisions that take account of considerations on a national level, and his decision-making powers may be very limited. As a result, he must look to officials and members of government, from the local to the national level, to take special responsibility in facing the issues, getting and evaluating the relevant information, and making the indicated decisions—especially when the stakes involves society as a whole.

What are the chances of emergencies, from automobile accidents to nuclear disasters? Motor vehicle accidents in Canada in 1964 took the lives of 4,655 people, injured and maimed over 139,000 and caused damage to the money value of $117,635,000. Thus in ten years, more Canadians were killed on the roads in Canada than died in battle in the five years of World War II. This indicates that the chances of an emergency on the highway are fairly high. Granting this evaluation, what can the individual do about it? He may wear a seatbelt, have his car checked, and practise safe driving; but he can do very little indeed about the mechanical condition of other cars or about the driving habits of the thousands of other people whom he meets on the roads annually. It can only be concluded that men who are responsible to society must face the issue here.

What are the chances of a devastating earthquake, in Vancouver, or in Montreal? If the best available evidence is that these are high risk areas, certain decisions follow. One decision here might be to pass and enforce appropriate building regulations.

What are the chances of a nuclear war? It is difficult to avoid the conclusion that the probability of nuclear war is greater than zero. History does not give one reason to believe there will be no more war; the uneven development of various struggling masses of people around the earth is a source of unpredictable conflicts; and in some respects the major decisions for peace or war are out of our hands. Granting the possibility of nuclear war, then we are confronted with the responsibility to do something about it. Preparation is one sort of protective action that is called for. This book has emphasized preparation throughout. However, it is difficult to persuade the individual of the importance of preparation for nuclear emergencies, because of the unreality and improbability of such an event in terms of his daily experience, because of the cost and sacrifices involved in preparation and training, and because the individual's efforts must be supported on a wide scale to be effective. Preparation is a response to early warning. Our leaders are responsible for appropriate use of the warning process: that of getting, collating and evaluating the relevant information, the making of a decision about the probable risks, and the conveying of this information to the relevant groups of the population with recommendations for appropriate preparatory measures.

Are Canadians psychologically prepared to respond adequately even to the early warning of mounting international tension? History, role, and circumstances are important determinants of how an individual, group, or nation views events, of the kinds of decisions that are made, and of the behaviour that is produced. For example, a father will perceive more danger on seeing a prowler enter his house than will a passing stranger; he will make a decision oriented toward positive action and accept the risks, and he will go after the prowler—while the stranger may merely phone the police. Canada's history is that it has never been the aggressor in war. This history makes it unlikely that Canada would ever start a war. It means that the events and decisions leading to conflict would be in other hands. Nevertheless in the event of an international conflict—it is highly probable that we would be subject to nuclear explosions at the same time as, or before, the United States.

Democracy does not provide the most efficient means for making decisions. However, intelligent and responsible men can hardly deny the issues here and the elementary conclusions that

there is a chance of nuclear war, that preparation is essential, and that preventive measures should be taken. These two primary responses to the possibility of a large scale emergency, prevention and preparation, are not incompatible. Preparation is a form of insurance, in case preventive measures fail. But if in taking out "preparation" insurance we stopped preventive measures, all insurance would lapse. The person who takes out the insurance of buying a safety belt for his car does not stop obeying the rules of safe driving. Prevention and preparation are equally sound responses to the possibility of disaster, and one without the other makes little sense. The individual citizen and society must consider both, but prevention is more clearly a social responsibility.

In conclusion, apart from preventing a disaster or nuclear conflict, there is no substitute for preparation and training. It is not necessary that everybody be trained; the key is organization and adequate training of responsible personnel. It is persons with the appropriate skills, with clearly defined responsibilities, supported by adequate organizations, who will contribute most to survival.

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