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CONSUMER BEHAVIOR AND WORKER PARTICIPATION
IN RECOVERY ACTIVITIES

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The contributions of Dr. Engler and Dr. Palmer are gratefully acknowledged.

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SUMMARY

The Problem

Post-attack research and much civil defense planning have been concerned largely with system design problems and with questions of what should be done, how it should be done, and the resources and manpower required to do it. Little attention has been given the problem of securing the participation of survivors in an organized recovery effort--the problem of getting people to do the things that must be done. This study examines the possibility of encouraging such participation by organizing the distribution of consumer goods, especially food, so as to motivate survivors to support and take part in an organized recovery effort. The focus of this study is on means for implementing recovery plans while, at the same time, meeting consumer requirements in post-attack situations.

The problem examined emanates from four interrelated assumptions:

- (1) A national recovery plan requiring coordinated critical recovery activities by survivors;
- (2) Forcing functions of time on the performance of those critical recovery activities;
- (3) A perceived scarcity of consumer items;
- (4) The natural proclivities and motivations of survivors to engage in activities other than critical recovery activities.

Given these assumptions, determining the means for obtaining the compliance of survivors with the requirements placed on them by the

recovery plan is an obvious requirement. Exploring the means by which this could be done is the objective of this investigation.

The Approach

The relevant literature on disaster was reviewed with special attention to the behavior of people as it relates to food consumption and work activity. First, the psychological effects of disaster on individual and group behavior were described. Second, the behavioral effects of scarcity and perceived scarcity were described, and the implications of those effects for social organization and the organization of distribution were examined. Third, the motivational aspects of work activity were outlined. Fourth, individual responses to disaster were related to social disorganization, and the needs of survivors for non-material supports were related to considerations of equity, legitimacy, and other qualities whose perception by survivors would influence their attitudes toward a post-attack distribution arrangement.

Taking account of these responses to disaster in general, to consumer shortages, to work activity, and to societal disruption, the study draws implications for the implementation of recovery plans. It describes the effects on motivation and organization of the differing localized perspectives in which individual survivors would view disaster and respond to demands for nationally oriented work activity.

The findings of the study are summarized in a list of characteristics of a distribution system designed to:

- (1) Meet consumer needs;
- (2) Provide the means for guiding the post-attack behavior of survivors toward the performance of critical recovery activities.

The distribution system so characterized would be designed to relate the individual's work to his command of consumer goods in the context of the needs and the values that would prevail under conditions of massive disaster.

The Findings

The attempt was made to summarize the findings of the study in a form that would be useful in the process of designing a post-attack distribution system, should that task be undertaken. The desired characteristics of a post-attack distribution system that would simultaneously serve to meet consumer needs and provide the means for directing and controlling societal recovery activities are summarized in the following list.

1. The distribution system must be equipped to monopolize the existing supplies of food and other critical goods.
2. The distribution system must be equipped to provide security for supplies of goods at every stage of their processing and distribution.
3. The distribution system must have the capability to satisfy primary group needs directly and in conjunction with the participation of workers in critical recovery activities.
 - a. The distribution system must be equipped with a means for the unique identification of workers.
 - b. The system must be equipped with a means for unique identification of the worker's family.
 - c. The distribution of goods to the worker's family should be linked directly to the worker's reward for participating in the national recovery effort.

- d. The rewards for critical recovery work should be differential with respect to risk, skill, and other "non-economic" considerations normally associated with jobholding.
 - e. To the extent possible, the rewards for critical recovery work should not represent a downgrading of the individual's pre-attack status (in relation to that of other workers in the recovery effort).
 - f. The rewards for work in critical, nationally oriented activities should be higher than the rewards for work requiring similar performance, skills, and so forth in less critical activities.
 - g. Wherever possible, the worker in a critical recovery activity should be brought into direct contact or direct communication with his family.
(This capability implies that, wherever possible, the worker be given the option of living with his family--perhaps by assigning the position or moving and housing the family accordingly--or that direct communication by mail, phone, or other means be established.)
4. The distribution system must have the capability to communicate information from the national level to the individual level.
- a. The system must describe the disaster itself-- the amount of damage and resulting problems-- emphasizing a national context but also describing local situations within that context.

- b. The system must describe the survival of people and resources, focussing almost exclusively on national totals of population, industrial capacity, and so forth.**
- c. The system must describe those external post-attack threats that are clearly directed at the nation as a whole.**
- d. The system must describe internal threats--for example, the scarcity of resources in relation to the projected period required to resume production.**
- e. The system must interpret and describe the goals of the recovery effort almost exclusively in terms of national goals--for example, the attainment of certain levels of food production or the re-establishment of basic facilities.**
- f. The system must describe interdependencies in the recovery effort, demonstrating the mutual dependence of communities and groups within a national framework.**
- g. The system must describe the critical recovery activities, establishing their priority on the basis of the interdependence of the recovery effort (f).**
- h. The system must describe the distribution arrangement by which primary group needs are related to work rewards.**

- i. The system must describe the arrangement for distributing food and other goods to public dependents.
- j. Description of the post-attack environment and the structure of the recovery effort must begin immediately after the attack, before informal information systems, spontaneous responses, and rumor become established as guides to activity and perception.
- k. The system must have continuous and direct access to sources of information indicated above, including information about the actual performance of critical recovery activities.
- l. The system's information must be up-to-date and accurate, especially where descriptions of local conditions afford individuals an immediate criterion for determining the reliability of its information.

(Accurate reporting and information are prescribed here, not for ethical reasons, but because the credibility of the system's information would directly influence the individual's perception of the system's capability, hence its usefulness or potential usefulness in satisfying primary needs.)

5. The system should have the capability to process for credibility the communications to individuals that do not originate with the system or conform with its objectives--that is, it should be able to monitor all public communication and counter the effects of misinformation with accurate, timely information.

6. To satisfy the need for perceived equity, the distribution system must have the capability to record publicly each exchange of work for goods and to judge whether a particular exchange conformed to the rules of the system.
 - a. The system must identify unique exchanges or transactions and record them.
 - b. The system must have rules and procedures for judging whether violations have occurred.
 - c. The system must be capable of punishing violators.
7. The distribution system must have the capability to satisfy the subsistence needs of public dependents.
8. To prevent possible disorder arising from random efforts to retrieve or enhance pre-attack economic positions or status, there should be publicized rules for insuring continued ownership of surviving property, for resolving (eventually) inheritance problems, for relieving individuals (at least temporarily) of pre-attack economic obligations, and for providing some degree of restitution when national production affords a surplus from which to make restitution.
9. The distribution system should be established under the auspices of the highest constitutional authorities.
10. The distribution system should be continuously overseen by councils of representatives of different areas and communities--for example, the Congress or a body under its immediate supervision.

11. **The distribution system should be equipped with mechanisms and criteria for appraising the criticality of conditions that call for the use of the system itself; clear guidelines should indicate when the system may safely be replaced by more familiar distribution arrangements; and those guidelines should be continuously publicized. (In effect, the system should be designed so as to facilitate its gradual absorption by more traditional institutions--its demise when conditions no longer require that such an arrangement be continued.)**

I. PROBLEM AND APPROACH

The Problem

Post-attack research and much civil defense planning have been concerned largely with system design problems and with questions of what should be done, how it should be done, and the resources and manpower required to do it. Little attention has been given the problem of securing the participation of survivors in an organized recovery effort--the problem of getting people to do the things that must be done. This study examines the possibility of encouraging such participation by organizing the distribution of consumer goods, especially food, so as to motivate survivors to support and take part in an organized recovery effort. The focus of this study is on means for implementing recovery plans while, at the same time, meeting consumer requirements in post-attack situations.

From previous studies (20) it was concluded that civil defense planners face a crucial dilemma: The activities which the natural proclivities and motivations of survivors will lead them to undertake are likely to be in direct conflict with the activities needed to enable the surviving society to recover. In other words, what we believe survivors will do differs from what we believe they will need to do for successful societal recovery.

If this conclusion is correct, and if it is assumed that there will be a recovery plan that would require the concerted activities of surviving communities in the context of a coordinated national plan, then the problem of how the different elements of the surviving population can be motivated to accept the plan and to carry out their parts in it becomes a salient issue. The specific characteristics or probable effectiveness of the assumed

national recovery plan are not examined in this study. It is only assumed that there would be such a plan and that it would require the concerted and coordinated efforts of the surviving population in order to be effective.

It is further assumed that there would be certain forcing functions of time on the implementation of the plan. Specifically, sufficient production and distribution capabilities must be operational before consumable inventory is exhausted. The implication of the two assumptions is that the national recovery plan would require the performance, by survivors, of what we will call critical recovery activities--activities that would result in the required restarting of production and distribution capabilities.

One further basic assumption is that scarcity of required consumer items will be characteristic of post-attack situations. The idea of scarcity as used here needs further elaboration. In the immediate post-attack situation, for the country as a whole, the ratio of survivors to food and other critical survivor items may well indicate a per capita surplus; however, to the extent that the consumer items are not immediately available to consumers, scarcity exists for those consumers and would likely be perceived as such. Also, even given an initial food surplus, until production reaches the level of consumption, potential future scarcity exists. It is to present or future scarcity, as perceived by individuals, that our assumption of post-attack scarcity refers.

The problem to be examined emanates from these four interrelated assumptions:

- (1) A national recovery plan requiring coordinated critical recovery activities by survivors;
- (2) Forcing functions of time on the performance of those critical recovery activities;

- (3) A perceived scarcity of consumer items;
- (4) The natural proclivities and motivations of survivors to engage in activities other than critical recovery activities.

Given these assumptions, it becomes obviously crucial that we determine the means for obtaining the compliance of survivors with the requirements placed on them by the recovery plan. Exploring the means by which this could be done is the objective of this investigation.

The Approach

The relevant literature on disaster was reviewed with special attention to the behavior of people as it relates to food consumption and work activity. The findings of that examination were synthesized under several headings. First, the psychological effects of disaster on individual and group behavior were described. Second, the behavioral effects of scarcity and perceived scarcity were described, and the implications of those effects for social organization and the organization of distribution were examined. Third, the motivational aspects of work activity were outlined. Fourth, individual responses to disaster were related to social disorganization, and the needs of survivors for non-material supports were related to considerations of equity, legitimacy, and other qualities whose perception by survivors would influence their attitudes toward a post-attack distribution arrangement.

Taking account of these responses to disaster in general, to consumer shortages, to work activity, and to societal disruption, the study draws implications for the implementation of recovery plans. It describes the effects on motivation and organization of the differing localized

perspectives in which individual survivors would view disaster and respond to demands for nationally oriented work activity.

The findings of the study are summarized in a list of characteristics of a distribution system designed to:

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The distribution system so characterized would be designed to relate the individual's work to his command of consumer goods in the context of the needs and the values that would prevail under conditions of massive disaster.

Observations of the behavior of consumers and workers are drawn selectively from the considerable body of literature on disasters. Included are reports of the National Research Council, the Strategic Bombing Surveys after World War II, and studies of prisoners of war, concentration camps, famines, economic crises, sieges, civil wars, migrations and social upheavals. A major problem has been re-integrating information gathered in those historical situations, and treated in the sources from the different perspectives of psychology, sociology, and other disciplines, into a framework pertinent to the poorly defined post-attack social environment. Behavioral observations from the literature have been assimilated in the context of organization during disaster, with special attention to the immediate post-attack situation envisioned.

The primary objective is a limited one. Rather than the design of an operating distribution system, the study is concerned with describing

the characteristics which such a system should have if it is to relate consumption and work in the desired way. In listing such characteristics, some of the operations that such a system must be capable of performing are described, but operational factors are not a primary concern of this report. The focus upon food as a consumer good is an assumption that allows specific consideration of the worst-case disaster environment.

This study touches upon and raises a number of politically sensitive issues. The assumption is made that the recovery of the United States from a nuclear disaster would require the utilization of human and other resources on a coordinated, nationwide basis. The assumption implies a degree of centralized authority necessary and sufficient to insure such utilization. Greater central authority is not uncommon in times of national emergency, however, and its implications should not be allowed to obscure the more basic political problems of recovery: Would perceived departures from pre-attack norms arouse opposition to implementation systems? Would a recovery arrangement prevent the resumption of pre-attack political forms when conditions no longer warranted extraordinary procedures? In an integrated recovery program, what decisions could be handled at each level of government?

These questions are not the central concern of this study. However, to avoid them because they may raise sensitive or controversial issues would be to deny the reality of the problem being studied.

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II. INDIVIDUALS AND GROUPS IN DISASTER

Several reviews of the literature exist (1, 2, 20, 21). In 1961, Nordlie and Popper (20) undertook to examine the disaster literature in a study of likely post-attack social and psychological phenomena. That study identified the four propositions about likely post-attack behavioral changes that are discussed below. These changes involve: (a) the re-ordering of value systems, (b) increased emphasis on primary group relations, (c) reduced attention to secondary group relations, and (d) greater incidence of role conflict.

The Re-Ordering of Value Systems

Violent disaster produces an immediate change in the value system of the individual, but the change involves a shift in the priority assigned to familiar values rather than a substitution of new ones. Several results of that shift are especially significant (20).

- Values assigned to primary group or familial relations tend to become dominant; those associated with secondary groups--for example, social status and private property--become relatively less important.
- There is an apparent contraction of time perspective that leads people to focus on activities "directly, concretely and immediately in accordance with their primary values."
- Consistent with the above responses is the tendency to attach importance to concrete appraisals and immediate performances of tasks that are associated with relief and recovery. Tasks perceived to promise effective, visible results are deemed important; skills and capabilities associated with such tasks are

highly valued; and action-oriented leaders, who perceive problems in terms of physical barriers and attack them directly, tend to be perceived as effective. Only as urgency is perceived to subside do more intellectually oriented leaders tend to be effective.

- Deviations from social norms--for example, criminal behavior--are likely to be affected by disaster, but authorities differ as to whether such deviations tend to increase or decrease.

As the threat is perceived to subside, there is a strong tendency to reinstate the pre-disaster order of values. Descriptions of the Holland flood disaster (19) illustrate this process:

After about six days, some of the evacuees began to return to Kortgene to search in the mud for some precious possession, or to retrieve some needed linen from the ravage in the living rooms. . . . During these days, the people were most dejected. As they had said at the time of the interview that they could hardly picture the terrible destruction, so they could, on their return, barely imagine that everything would ever come right again.

(p. 59)

But attitudes soon changed. Daily traffic to the village increased, and women joined the men in tasks of cleaning up and reclaiming goods and property from the mud.

Thus, life in Kortgene soon resumed a more normal course. . . . On Thursday, February 26, the grain-exchange in Kortgene was reopened; this is the center where all farmers and dealers meet every week. On Monday, March 2, the buses on the island began to run on normal schedules. On Thursday, March 5, the first public Council Meeting was held at Kortgene. . . . [In] the second week of March the school finally reopened. . . .

(p. 60)

Older bases for relationships and value systems re-appeared as the values of the "emergency community" faded.

At the beginning of March, when the Municipal Council and the Burgomaster returned, it meant in fact that ... the ... "emergency community" ceased to exist. There was no longer a single group living in Kortgene, inspired by the single purpose of combatting the after-effects of the disaster.... The informal leaders retreated to the background, the institutional leaders resumed their positions of authority.

(p. 61)

A typical example of the disappearance of the "emergency community" and the return to the old system, is provided by the story of someone who, after the warning, had quickly obtained some candles from his neighbor; the latter, a shopkeeper, reminded him two months later that he should pay.

(p. 62)

It may be noted that both the original shift in values and the return to pre-disaster systems affected relations with authorities and social organization, both within the community and in the context of a larger society.

Primary Group Relations

Studies of previous disaster experiences in the United States suggest that the following responses are characteristic of the primary group (20):

- The threat of disaster accentuates feelings of intimacy and solidarity within the family but also leads to confusion and uncertainty that result in part from a lack of explicit plans to cope with disaster.
- Heads of families tend to attempt to contact, locate and join their families, to provide for them, and to insure their safety at the expense of their other

duties and obligations. Husbands and wives tend to look first to their immediate families, to close relatives next, then to friends and neighbors, and finally to acquaintances and people they do not know.

As the threat of disaster is perceived to subside, time perspectives expand and non-primary values again become salient. Intermediate goals, contributing to the long-run (in addition to the short-run) satisfaction of primary goals, are again important (as, eventually, are secondary values related to wealth, status, comfort, and so on).

In summation, it may be said that during disaster the most intense loyalties are directed toward the primary group, and people behave accordingly. This conclusion may be qualified in cases where the primary group includes only the self (for example, the case of the unattached adult male). Thus, in the Halifax disaster, Prince observed that

... the earliest leadership that could be called social, arising from the public itself, was that on the part of those who had no family ties, much of the earliest work being done by visitors in the city. The others as a rule ran first to their homes to discover if their own families were in danger.

(quoted in 16, p. 310)

Secondary Group Relations

The re-ordering of values and emphasis upon primary group activities contribute to a third characteristic of disaster response: The individual's de-emphasis of his duties, responsibilities, and activities associated with his participation in secondary groups. The point is crucial, for among the secondary groups of a society are the organizations whose interrelated functioning provides or accounts for the division of labor, social cohesiveness, and similarly vital aspects of the society's existence. Without the operation of commercial, industrial, service, governmental,

military, and other organizations, it is difficult to picture a functioning society at all.

When disaster-threatened individuals emphasize primary group concerns at the expense of their secondary group activities, the immediate effect is likely to be a loss of leadership and personnel by secondary groups. Most organizations do not have plans for coping with disaster; in any case, at the time when such plans must be contrived, interpreted, or made operational, an organization's (surviving) leaders and personnel may instead be attending to their primary group concerns. To the extent that an organization's functioning is thereby impaired, it is left unable to contribute "outputs" to, or make use of "inputs" from, the other organizations with which it is normally linked. Thus, the de-emphasis by individuals of their secondary group activities could lead to a breakdown of the society's network of interrelated organizations.

Disastrous consequences of the primary group emphasis apparently did not materialize in Texas City largely because of important exceptions and the actions of a few exceptional individuals. Training in performance of duty loomed large in the exceptions--for example, most refinery workers stayed on the job, as they had been trained to do, until their units were safely shut down. In some cases, however, the fortune of circumstances was the most important element in the performance of secondary group activities.

In Texas City the chief of police remained at his post from the moment of the first explosion until seventy-two hours later, never returning to his home during the entire period and playing a vital part in the re-organization of the community. He ascribed his ability to give undivided attention to his official duties to the fact that he knew that his family was safely out of town, visiting relatives, at the time of the explosion.

(16, p. 311, emphasis added)

In a democratic society, organizations and secondary groups generally have little or no authority over their personnel. They rely on the inducement of the work reward and cannot order people to act when the inducement is not sufficient. The military organization, of course, is an exception to this rule, but at the present time, the military's civil defense activities are viewed as secondary to its responsibilities for external defense and military operations; furthermore, the military's potential role is pictured to be one of providing only temporary assistance to civil authorities in the area of rescue and remedial activity, not long-term recovery (17). Another exception, possibly, is the secondary group whose leaders and personnel are trained, equipped, and in some degree disciplined to respond to pre-attack emergencies. Such "disaster-ready" organizations include police forces and fire departments. Even these organizations, however, are likely to be impaired in their functioning by a widespread disaster that threatens the primary groups of their leaders and personnel-- a probability that is often implicit or explicit in discussions of their post-attack roles and capabilities (4).

Role Conflict

The discussion has already suggested the potential effect of role conflict on recovery activities. Where individuals assign priority to familial or primary group activities and responsibilities, secondary organizations tend to be less effective or cease to function. As documented in the disaster studies previously mentioned, the principal role conflict reported by individuals was that between the family group and the employment group and/or the community as a whole. Many men were torn between loyalties to "the plant" and "the home;" others, such as policemen, firemen and public utility workers, felt greatest conflict between "the home" and their service duties to "the community." The studies found that the "great

majority of persons interviewed who were involved in such dilemmas resolved them in favor of loyalty to the family, or, in some cases, to friendship groups" (16, p. 311). The latter point may provide a clue to reorganization in disaster: It may be possible to re-orient survivors to recovery work within a disaster frame of reference which infuses primary group values into formerly secondary group relationships. This seems to occur spontaneously, to a degree, in disaster situations. For example, in Texas City (16) it was reported that at most plants "the most common, almost universal, reaction was to think of the men first and of the plant later":

Property! Nobody gave a damn for property! All that was important was life. I've often wondered just how it would be to walk off and let a plant burn up. That was the way it was. We didn't even consider fighting the fire.

(p. 313)

That this type of transformation in secondary group loyalties could be dysfunctional for society as a whole--particularly in a longer view--seems apparent. However, there would seem also to be possibilities for building upon such human orientations to reinforce other-than-family ties in disaster situations and thereby insure the performance of recovery-related work. In Texas City, a minister found his disaster role flowed naturally from his occupational role--a role infused with personalized, primary group characteristics:

After I heard the explosion my first impulse was to go down to the docks and try to help there. But on the way down I saw two or three folks I knew who had husbands down there. I saw then that my job was with the families--not doing rescue work. I had a job that I was peculiarly suited for, prepared for, and I felt that I should do that.

(16, p. 312)

Others found it easy to disregard an occupational role in order to adopt a role identifying them with the whole community. These appeared to be persons whose occupation was unrelated to needs created by disaster (and, possibly, who had less reason to fear for their families):

Many merchants and clerks rushed from their stores to aid in rescue work, leaving both goods and cash on the counters. The postmaster in one tornado town left the post office completely unguarded, even though the windows were shattered and mail was strewn about the floor. This was, it is true, an extreme case of abandonment of the occupational role.

(16, p. 313)

Familial maintenance activities, though they are more immediate, concrete, and satisfying to the individual in disaster, do not contribute to the division of labor or the organized productive activity that is required to maintain social cohesiveness or anything but an extremely primitive level of economic existence. However, to force individuals to take part in less directly satisfying secondary group activity is likely to produce feelings of frustration and guilt to the extent that individuals feel they are neglecting the primary group concerns that are apt to be of overriding importance to them.

Viewed in terms of general responses to disaster, therefore, the literature tends to support the view that individuals would be likely to perceive disaster in localized contexts. They would attend to primary group concerns. It suggests as well that humanitarian, service, and other values do account for adaptive behavior and could be channeled to support the re-organization of human activities in ways allowing individual effort to support a national effort.

III. THE SURVIVOR AS CONSUMER

The discussion has indicated that the disaster-threatened individual's primary group is the object of his greatest concern and therefore is the most influential source of his motivation. That concern typically has two major aspects: concern for the physical security of self and family, and concern for meeting the immediate needs of the primary group. In this section, the second aspect is examined with particular emphasis on the need for food. The effects of food shortages on the behavior of individuals and groups and the implications of these effects for post-attack behavior are considered.

Individual Effects of Deprivation

Studies of World War II prison camps, experimental research on starvation at the University of Minnesota, and postwar medical research and assistance in under-developed countries have led to increased understanding of the behavioral effects of starvation. From the work of DeCastro (5), Dubos (7), Guetzkow and Bowman (12) and Smith and Woodruff (24) it is possible to describe those aspects of starvation that need to be considered in connection with possible post-attack behavior. Emphasis here is placed on the effects of partial starvation, which can last for an extended period of time and therefore have persistent behavioral effects.

Partial starvation does not lead to a quick death. On a diet of about 1600 calories per day, an individual may lose roughly one-fourth of his body weight if medical and sanitary conditions are adequate and energy expenditure is low. During that period, the observable loss of weight is accompanied by greater susceptibility to disease, of which the symptoms are also likely to be apparent. Additionally, specific dietary deficiencies

produce various physical effects. The disease of protein deficiency, for example, has been observed to produce blotchy skin and swelling of the stomach, while diseases such as rickets, pellagra, scurvy, anemia, and beriberi produce similarly noticeable physical effects. Mental acuity, on the other hand, is relatively unaffected, though individuals are less able to direct their mental processes as the concern for food dominates thoughts, dreams, memories, and conversation. So far as these physical and medical effects are concerned, two characteristics appear most significant for present purposes: First, partial starvation reduces or eliminates the ability to work or be physically active; second, the physical effects are plainly visible, both to the sufferer and to others.

The behavioral effects of partial starvation are reflected in increasingly apathetic attitudes toward any relationship or activity not directly associated with hunger and its alleviation. Standards of courtesy, appearance, ethics, and discipline tend to disappear insofar as they are reflected in behavior; social and sexual interests decline in importance; and interpersonal ties are broken as the individual "withdraws." Feelings of guilt are aroused both by the observation of suffering among those for whom the individual feels responsible and by the withdrawal from social intercourse, the latter accompanied by fear of rejection and social unacceptability. Within the primary group, husbands have been observed to deprive themselves to improve the diet of their families, and parents to sacrifice for their children.

The perception of starvation in others has effects on the behavior both of the starving and the well-fed. The sufferer's recognition of physical, emotional, and social deterioration prompts alternating periods of alarm and apathy. His own feelings of safety are related to his perception of deterioration in others (15), which increases his feeling of vulnerability.

The suffering of loved ones may produce personal sacrifices and guilt feelings, as noted above, but it may also prompt avoidance of the painful scene. Gouré (10, 11) notes that workers in besieged and starving Leningrad during World War II stayed at their places of work partly to avoid the desolation that existed in their homes. Well-fed individuals also react to the sight of starvation, tending to be shocked and alarmed when an emaciated sufferer appears in a well-fed community. The sufferer himself, finally, tends to resent his dependence on whatever sources of food are available, perhaps experiencing frustration or humiliation at accepting food under charitable circumstances. In conclusion, the physical, psychological, and social effects of deprivation tend to be cumulative and mutually reinforcing; the result tends to be inability to work, indifference and loss of motivation to work, isolation and loss of social constraints and supports, and eventual loss of the sense of responsibilities and primary goals that formerly served to structure and control the motivation to work and be part of society.

It should be noted that adequate nutrition itself is often dependent on organized social behavior. Under unusual circumstances, people may be unaware of what constitutes a healthy diet. In a post-attack environment, for example, contamination resulting from radiation or poor sanitation could call for safeguards or procedures of which people had inadequate knowledge or warning. The availability and acceptance of information about nutrition could become a major factor in diet and bear a direct relation to the incidence of the physical and behavioral effects noted above.

Group Behavior and Deprivation

From the discussion of individual effects, some aspects of group behavior in the face of starvation are already apparent. Famine, which may be defined as extreme scarcity on a group scale, tends to break down

normal or pre-disaster relationships within and among groups. The preceding discussion suggested a number of such breakdowns--in particular, those that influence secondary group ties. As hunger increasingly dominates motivation, competition for food tends to override secondary group concerns. In concentration camps, military prisons, and other survival situations, cooperative behavior (even that involving the search for food) has often and significantly been limited by suspicion, rivalry, group differences, and brutalizing conditions (3, 25).

The family unit is more viable in such circumstances, although grief and sympathy may produce an avoidance reaction even here. Where deprivation is associated with the inability of the former "provider" to support the family, his loss of authority is a notable consequence and weakens family solidarity. For example, part of the social change experienced by the United States in this century has been attributed to the "freedom" accruing to women no longer dependent on the husband or father for their livelihoods, and the breadwinner's loss of familial authority during the unemployment of the 1930's has been widely observed. Other experiences suggest that, as hunger becomes very great, familial solidarity and similarly deep-rooted norms are threatened by competitive behavior, with parents stealing from their children, and children from the feeble (10).

Such violation of social norms results not only from the breakdown of pre-disaster relationships but also from the formation of new groups in response to scarcity. In other words, societal breakdown presents not only the opportunity to violate norms and controls but inducements to do so. It has been noted that individuals experiencing partial starvation tend to think and act largely in relation to food procurement, that the breakdown of social standards is accompanied by fear of social rejection, and that individuals may tend to feel humiliation at dependence on some existing

source of supply. All three reactions suggest the possibility that new groups could coalesce in a search for food.

In some situations, it was noted above, individual competition tends to preclude cooperative efforts. But there is also evidence that some group organization may take shape around dysfunctional, unethical, or criminal behavior. For example, even without the motivation of hunger and the opportunity afforded by social breakdown, there is an apparent tendency for adolescents to throw off family ties and, in some segments of the population, to form gangs that collectively violate social norms. The implications of such behavior for post-attack organization are given additional weight by accounts of twentieth-century famine in Russia and India, where hordes of children roved the countryside, pillaging and otherwise engaging in criminal behavior (9, 23). In Leningrad, where harsh penalties were enforced against violators of food regulations, the account by Gouré (10, 11) suggests that food theft was more common among individuals who were members of groups or collectives, possessing common goals and collective strength. The evidence for such behavior is spotty and difficult to interpret, but the degree of breakdown in social groups and social controls that could result from nuclear attack suggests a need for further investigation--perhaps with an eye to such statements as Huntington's (13), which noted a positive relation between drought and civil upheavals in historical time series covering the period since 400 A. D.

Leaving aside the problem of cooperative criminal responses, it remains a strong possibility that the threat of starvation could produce emergent groups whose members would abandon other activities to join the group's collective effort to reduce the threat. Even if well-intentioned, the member's new orientation could preclude or undermine his participation in another recovery activity--for example, a task prescribed by long-range or overall needs for food, but one not perceived by the individual

to be concretely and immediately connected with his securing food for himself or his family.

The Perception of Scarcity

To this point the discussion has centered on the behavioral effects of a real scarcity. It remains to point out that perceived scarcity, whether or not the perception be correct, produces behavioral effects similar to many of those arising in the presence of partial starvation itself. Reactions to real scarcity emphasize the fundamental concerns that are aroused-- concerns for personal and familial survival to the exclusion of other concerns. It is not surprising that the threat of scarcity arouses similar responses. Any uncertainty about the present or future food supply can be expected to produce immediate stress and behavior that would approximate the response to real scarcity.

With respect to the post-attack environment, real scarcity would likely exist in some areas. The fact would not be unusual: Iklé (14) points out that wartime scarcity has more frequently resulted from maldistribution than from general scarcity, or the threat thereof. In the past a very small threat of disaster has often occasioned the perception of scarcity and potential scarcity. "Scare buying" and hoarding have frequently resulted from the perceived likelihood of such relatively minor restraints on consumption as price controls and light rationing. The threat of scarcity that would be perceived in the aftermath of widespread nuclear disaster is likely to be much greater. In the context of even a "limited" nuclear war, the Office of Emergency Planning has foreseen the possibility of "psychological inflation not arising out of genuine shortage" (18). In this case, the use of the term "inflation" and accompanying remarks about price, wage, rent, credit, and other controls appear to presuppose a much

lower level of organizational and institutional disruption than could result from a widespread nuclear attack on the United States. The conclusion is inescapable that a widespread nuclear disaster could produce a widely perceived threat of scarcity.

Reactions to Warning

The perception of present or potential food shortages, whether real or imagined, leads individuals to evaluate the situation and respond to it on the basis of whatever "information" they have available. Research on warnings in disaster and stress situations indicates that such information represents a summation of habits, experiences, group-based impressions, official communications, and informal communications through social channels (6, 8, 26). A variety of the sources suggest that: (a) The extent to which a disaster could trigger the responses already discussed could vary greatly from one individual or group to another and from one area or locality to another; and (b) much of the information thus acted upon could be misleading or inadequate with respect to the set of responses that would be most likely to benefit either the individual or the society.

The unsuitability of uncontrolled market mechanisms for distributing goods in a post-attack situation is suggested by the regularity with which controls have been placed on such mechanisms when relatively minor emergencies, such as the two World Wars, have occurred in the past. It is apparent that extremely competitive behavior--competition for food in particular--characterizes the response to shortages. The competitive market provides an obvious outlet for such behavior, which it typically reflects in inflated prices. Even in normal times, the theoretical balance of supply and effective demand does not reflect the relation of needs and resources. Under conditions of stress and disaster, demand

may reflect in large part the degrees of fear or uncertainty affecting individuals, and prices reflect still less the relation between long-run needs and resources. "Psychological inflation" would produce not only inequities in consumption, but misallocation of scarce resources. It is pertinent to point out that the market tends to increase the level of uncertainty about shortages and potential shortages. That tendency must be considered alongside the more widely recognized reasons for controlling market activity, if the degree of uncontrolled market activity should become a factor in post-attack planning.

The public response to official warnings is a more encouraging topic, for the response is likely to be favorable. There is consistent evidence that people turn to official sources for information and guidance-- that they expect recognized officials (from mayors to presidents) to provide positive direction and corrective action. When such direction has not been provided, resentment, protest, and apathy have often followed. When warnings originate with official sources, however, and when they have been delivered in clear, unequivocal, and certain terms, compliance has been remarkably high. For example, Rayner (22) found 100 per cent compliance with precautions about a health threat following a flood in Connecticut. Though little such evidence is available on food crisis warnings per se, the evidence for favorable responses in areas of similarly urgent concerns is highly suggestive that warnings concerning scarcity would receive similar attention. With respect to official warnings, however, several conditions appear to be necessary for a favorable response:

- The sources of warnings must be recognized as official;
- The sources should be recognized as "expert" or qualified to deal with the perceived threat;

- The personnel involved in warning should demonstrate appreciation of the threat that is perceived by the public and show convincing concern for the dangers perceived by the public.

Reactions to Controls

It has been pointed out that market mechanisms and procedures have customarily been controlled when disaster has threatened. Such controls have had the effect of reducing the amount of voluntary, interpersonal, and anonymous economic behavior that characterizes market activity. In so doing, the controls clash with pre-attack values associated with "free enterprise" systems. However, disaster may be expected to reduce the importance or motivational influence of those values. That is, values associated with market activity can be expected to be less important to those people who experience disaster--in this case, to those who feel hunger or perceive real or potential food shortages.

In general, people who perceive disaster turn to authorities (not "outside" agencies per se) for relief and direction, placing emphasis on immediate personal needs (especially primary group needs) and downgrading values that perhaps conflict with a particular means of providing relief from the threat. In short, people who perceive a disaster threat expect authorities to "do something" to reduce the threat; their reactions to authority are based not on the pre-disaster appropriateness of the means, but on their immediate effectiveness in meeting the threat. When authorities appear ineffective in meeting disaster, reactions are critical; when authorities meet disaster needs with preventive action, reactions tend to be indifferent; only when the threat has first been felt, then dealt with through heroic efforts, do reactions become adulatory. (Note that police and fire departments are accorded greater status than agencies providing everyday relief, and the Berlin Airlift produced lavish praise among the

sufferers.) Similar factors influence the acceptance of controls when disaster strikes. Where the controls are perceived to be effective in meeting a perceived threat, and especially if they are deemed unavoidable, they become acceptable even if they conflict with pre-disaster values.

The implications of this discussion for post-attack responses to controls are fairly straightforward. Scarcity would be interpreted as posing different levels of threat to different areas and different people. Readiness to accept controls would vary accordingly. The breakdown of market mechanisms and the survivors' emphasis on primary group values both suggest that controls would be required and that their acceptance would be more likely if considerable information about the long-run nature of the scarcity threat were available. To offset the effects of varied perceptions of disaster in different areas and individual situations, a nationwide program of distribution would be expected to attract greater acceptance and participation to the extent that the threat of scarcity could be established in terms of nationwide needs, shortages, and resources.

IV. THE SURVIVOR AS WORKER¹

Pre-Attack Work and the Impact of Disaster

The salient characteristics of the pre-attack work situation, insofar as a behavioral viewpoint is concerned, are: (1) the market for workers; (2) the economic rewards for working; (3) a number of non-economic aspects of jobholding; and (4) the conflicts with the motivation to work that result from alternative concerns. As aspects of work motivation, the first three characteristics typically relate to a choice among jobs; the fourth characteristic comes into play when the choice is between working and not working.

The pre-attack market for workers is usually depicted as relatively "free." That is, within the range of available jobs that he is qualified to hold, the worker is free to choose that which he prefers from those of which he is aware. Within that market system, the major determinants of work rewards include the individual's ability, training, skills, and other personal attributes, including his membership in work-related organizations like professional associations and labor unions. Also of major importance in some cases is the relation between the reward and the risk attached to a job. Non-economic or indirectly economic criteria, depending on such factors as working conditions, proximity of the job to home or family, prospects for advancement, and perceived status, also influence the worker's choice of job. Conflicting with pre-attack work motivations,

¹The term "worker" requires definition for clarity. As used in this report, a worker is anyone engaged in socially recognized productive activity, whether he be self-employed, professional, laborer, or otherwise engaged. In other words, the study is concerned with psychological and other related factors that influence behavior with respect to work, not with any particular group in the population that "worker" might connote.

of course, is the obvious range of diverse interests and concerns--for example, the desire for leisure time, the pursuit of social activities, and the care of the family.

For the pre-attack worker, it is roughly the "balance" of these considerations that answers, within reasonable limits, such questions as whether he will work, where, and how well. How this balance is worked out, even in pre-attack society, is imperfectly understood. It is safe to assume that the process of reconciling or coordinating such diverse sources of motivation and need satisfaction is not consciously articulated by the individual. The process has evolved gradually, at any given time its human elements operate largely on the basis of habit and custom. Overall, it represents a viable and acceptable weave of psychology and technology-- a pattern of social organization supporting specialized work. Massive disaster would disrupt that pattern. Thus it is not necessary to predict institutional breakdown in order to make a case for establishing a more direct connection between working and consuming.

In the case where the organization and institutions that normally support productive activity, and relate working to consuming, would cease to function or fail to function adequately; the translation of rewards into need satisfaction would no longer be predictable. The relation between specialized work and the meeting of pressing, immediate threats would not be perceived. The protection of the (absent) worker's home and family would not be taken for granted by him. Many pre-attack jobs would no longer help to define the post-attack social role, or be perceived as especially pertinent to activity in the new conditions. The list of contingencies could be extended; it is sufficient to say that familiar institutional supports for working would likely be removed at the same time that individual disaster responses would be pulling the worker away from the job.

Both the psychological and the social organizational effects of disaster, finally, lend weight to the conclusion that the uncontrolled marketplace should not be relied on to relate work, consumption, and the implementation of recovery.

The channeling of individual work into critical recovery activities could be facilitated by the operation of a distribution system for consumer goods which would link the satisfaction of consumer needs directly to the performance of critical recovery activities. To accomplish this linking under conditions imposed by both psychological re-orientation and institutional breakdown, the distribution system would have to be designed to operate in the social and behavioral environment previously described.

Recovery Work in Relation to the Primary Group

The direct effects of disaster on behavior, as well as its indirect effects through changes in social organization, suggest that the following factors are crucial in relating work on critical recovery tasks to primary group concerns.

- The translation of work into goods.

The more direct this relation, the more likely its perception. On its perception by survivors would depend its workability.

- The satisfaction of primary group needs.

Consumer goods should be provided for the worker's immediate family in conjunction with his working, if the family tie is to motivate his working.

- The security of the primary group.

Where the family is perceived to be secure, the worker is more inclined to leave them while he works.

- Contact between the worker and his primary group.

Contact would reinforce the sense of security and the motivation to "provide." Where close contact is not possible, communication would serve similar purposes, but less well.

The Non-Economic Aspects of the Recovery Position

Apart from its relation to satisfying his primary group needs, the job itself would continue to have influence on the worker's motivation. The principal factors would include:

- The familiarity of work activity.

The more familiar the work situation and type of work--the more closely they conformed to the worker's abilities and other attributes--the more likely would the worker find comfort and security in them.

- The perceived relation of the task to the recovery effort.

At the psychological level, the urge would be to remedy or relieve the effects of disaster. The worker's perception of a positive relation between his task and the recovery effort would tend to increase his motivation to participate.

- The perception of risk.

Perceived risk would probably be associated with many recovery jobs, reflecting not only real dangers but uncertainty about the nature of dangers in the post-attack environment. Where information cannot dispel false perceptions of risk, reward would be expected to take account of them. Thus a concept of relative risk and correlative rewards could be an important factor in work motivation.

- The perception of status.

While not an important factor in motivation in the initial disaster response, the status of a job would be likely to emerge as a significant characteristic of it during the recovery period.

Non-economic aspects of recovery work would presumably produce greater effects on motivation as consumption rose above the subsistence level. They may therefore be considered to have more significance at later stages of recovery. However, the recovering economy and society would have an evolution of their own; hence, decisions about non-economic (as well as economic) aspects of working and consuming would tend to perpetuate the relations and status they originally supported. Such decisions should therefore be made with an eye to the requirements of later social system states.

In summation, it is apparent that the factors involved in recovery work follow from the analysis of individual disaster responses in preceding sections. However, the actual implementation of recovery arrangements designed around these factors would require consideration of the American population's values, traditions, customs, mores, and the whole range of social organizational structures that support economic activity.

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V. DISASTER AND SOCIAL ORGANIZATION

Society must be understood as something more than a population of individuals inhabiting a particular geographic area. Individuals and individual behavior are directly perceivable and readily comprehended. However, from the perspective of social structure and social process, it is not individual behavior per se that is of interest, but patterns of behavior--especially enduring patterns.

The behavior of individuals in any social grouping is not random but occurs in relatively stable and predictable patterns. It is from these behavioral patterns that the existence of institutions is inferred. Institutions can be defined as:

... patterns of values, norms, attitudes and constraints which govern the choice and stabilization of functionally significant social behavior in concrete patterns of action.

(27, p. 96)

Social institutions are patterned and shared determinants of behavior. From the standpoint of an individual, it might be observed that a certain person is a husband, father, Presbyterian, Democrat, Rotarian, and realtor. Just specifying these characteristics tells a good deal about certain kinds of behavior one would expect of that person. From the standpoint of social structure and process, the ability to name these characteristics is indicative of the existence of familial, religious, political, and occupational institutions. A total society can be viewed as a network of institutions which provide ranges and limits for the behavior of individuals.

In his analysis of the vulnerabilities of social structure, Vestermark (27) discussed institutions in a passage particularly pertinent to this study:

It will be seen that the term "institutions"... is not synonymous with "organization" in the sense of a church, school, corporate business enterprise, military unit, hospital, or prison. These are all forms of social organization, which is a specific collectivity of individuals ordered toward the attainment of particular goals; as organizations, they are manifestations of institutions... in society. An institution forms a larger nexus than the particular organizations which may embody it. Thus, the economy of industrial society is an organized, complex institution, with systems for evaluating products and services, rules for mediating economic exchange relationships, and ordered, accepted patterns for accumulating and expending material and abstract wealth. All of these institutional patterns control the process of production and consumption. Specific occupational roles, corporate-bureaucratic forms of social organization, and monetary systems are the social structural dimensions of the institutionalized economy.

(p. 97)

This discussion is continued in similar terms for other major institutional systems of society, such as religion, the polity, and marriage. For present purposes, the critical question is this: In what ways would the institutional complex of American society be damaged and altered by a nuclear attack, and what implications would such changes have for civil defense planning relating to post-attack distribution?

The institutions of society are more or less adaptive within a system in constant flux, but fluctuating within rather stable bounds. Participants in the economy share a common set of assumptions about the monetary system, about sources of supply, and about the nature of economic exchange. Thus a disaster occurring at one point in an otherwise intact society poses no threat to institutional complexes, because it has little or no implication for the alteration of rules or ordered patterns of institutional behavior for the society as a whole.

The effects of nuclear attack, however, would not only remove role occupants in different parts of the system, but would close down production and distribution (at least temporarily), destroy or remove from access many critical resources, and alter the normal operation of the American economic system. Normal patterns of behavior would not be possible and normal expectations, with respect to the instrumental value of work for gaining access to consumer goods, would be abrogated by these various effects. In short, key institutional sectors of society would be severely disrupted. It is because of such disruption that human behavior, which may be adaptive both from an individual and community standpoint in a point-disaster situation, could be dysfunctional or counter-productive for the recovery of post-attack society as a whole.

It is one thing to predict that institutional breakdown would occur, quite another to predict where and how it would occur. Present knowledge affords grounds for the first assertion. With respect to the second, our knowledge is not sufficiently precise to elaborate the complex issues and decisions required to recover from societal breakdown--hence the concentration of this study on the basic factors of recovery work requirements and individual consumer needs. But this analysis will consider a number of the underlying complexities of social organization that can be foreseen in preparing a distribution mechanism, setting and keeping it in motion, and allowing it to be re-absorbed in a viable democratic society. Two aspects of the institutional problem have special relevance to the present study. They are the pluralistic concepts of work and the roles of sub-cultures or non-national social systems within the national framework.

First, the channeling of work into crucial recovery activities leaves open many questions of what is vital post-attack "work" and how can energy contributions be measured. All areas of human skill and talent

in our complex society represent interrelated subtechnologies of the total system. Concern with countering entropy in that society-wide system therefore implies concern with many kinds of subtechnologies and the workers needed to serve in them. The information needed for a system that supported recovery would include an inventory of a whole array of skills in the population, their spatial distribution, and their pre-attack patterns. Possible rearrangements of those patterns in the post-attack world should then be forecast. For the present, our focus is on characterizing a distribution mechanism that could take advantage of more thorough knowledge about economic and social skills.

Second, although recovery planning must envision the build up of a national social system and culture oriented toward recovery, this too represents a much simplified model. It does not account for diverse versions of the post-attack social system that may appear among the human survivors at different points in the total society. A society-wide social structure and nationally oriented culture of recovery, even when successfully reinforced by a recovery mechanism, will still be experienced differently by different individuals and groups, and this fact will be reflected in post-attack institutions. With existing knowledge, the form of such institutions cannot be predicted. But the appearance of the human institution-building process can be predicted. That is, surviving individuals will continue to create social reference points for stabilizing their human relationships.

Rather than viewing these complexes as nuisances in the management of recovery, they should be seen as potential resources in the recovery process. For example, occupational roles may provide an intermediate level of organization as well as motivational support for individuals in a national recovery effort. At the same time, it is not remiss to suggest that a recovery system should allow for councils and other decision-influencing

bodies. These would operate at several levels in the national society, informing and modifying decisions and insuring that recovery actions were relevant to multiple dimensions of human life in society. Such social mechanisms could begin the post-attack adaptation of political institutions and the re-orienting of other institutions to the post-attack environment. Preparations for these mechanisms should assume, initially, continuity with the political units of our federal model of government. The important point is that central "managers" of recovery must be sensitive to multiple human expressions of needs by the survivors in a democratic society, even as they ask individual survivors to be sensitive to the needs of national technologies. Expressions of human need will become more diverse as time after attack increases, and systems of recovery must be able to take account of them.

This discussion of the evolution of post-attack institutions is related to the problem at hand--the characterizing of a distribution system that would motivate nationally oriented recovery work. When research is focussed on factors affecting the design and operation of a single mechanism for recovery--in this case, a distribution system--it is important to recognize that the recovery of a complex, evolving society would not be simply the result of a neat, logical series of command decisions. Instead, crucial elements in the recovery process would be subjected to controlled coordination. That is, the management of recovery would enable a multi-valued system of social organization to grow and maintain itself.

The distribution system identified in this study, therefore, is not basically a command-control mechanism, despite the apparent rigidity and discipline involved in its operation. Collectively, the surviving population will have requirements for organization. Individually, people will emphasize new priorities and concerns in relation to their psychological and

physical needs. Survival, both collective and individual, would depend on the linking of organizational (work) requirements and individual need satisfaction. The distribution system has been approached, therefore, with emphasis on its responsiveness to needs rather than its disciplinary function. The importance of that distinction is apparent when the particular system is viewed as an enabling mechanism for the growth of a pluralistic society.

The Social System of Recovery

This study does not concern itself with a blueprint for rebuilding the damaged institutions of society following nuclear disaster. But it attempts to account for the general social and cultural tendencies that will be reasserted as human beings re-establish social reference points and infuse meaning into their lives. In effect, we bet on these tendencies in planning for societal recovery, even as we concentrate on "macro" technologies in a complex, interdependent society and on the "micro" economics and psychology of the post-attack situation. Planning cannot shape and guide social and cultural processes in all particulars, but it can be concerned that newly established social relationships and the most significant values in the post-attack world be functional for society-wide recovery.

This means that planning should reinforce the evolution of a "social system of recovery." In the case of critical recovery activities, for example, it would be desirable if society accorded high status to the roles that people occupy as they perform work that contributes to recovery. Those roles must, insofar as possible, provide status and orientations for people on a nationwide basis.

An analogy may clarify this picture. In wartime as we have experienced it in the past, the nation girds itself for defense against an

enemy. Physical and human resources are mobilized. A part of this effort to create a national defense posture goes into re-orienting our social system toward work against the common foe. We do not consciously state that one of our major purposes in a war effort is to build up a "social system of defense," infused with values that place priority on opposing an enemy. But in industrial and manpower mobilization for war, many of the things we do on rational economic grounds--and the way we do them--build the social and cultural sinew that supports and strengthens the society in its war effort.

The more total the war effort--the more completely the nation and its manpower resources are mobilized--the more the social system of defense affects everyone's life, pushing to the forefront social roles and value-priorities that stress the orientation of a society and its members toward "work" that is directed against an external enemy. In some cases, the lawyer becomes a major, the machinist a sergeant, and the postman a seaman in the social system of defense. In other cases, the skilled or unskilled worker changes from a non-defense to a defense job, or perhaps his peacetime employer shifts the industry to defense work. Even men in professions and services who continue in occupations relatively unchanged (in any formal way) will find it necessary to legitimize their services by publicly rationalizing them in terms of the war effort.

Throughout a wartime society there are shifts in crucial social roles and in the status afforded to those roles as the social system of defense takes form to re-orient a total society for survival in an emergency. Concurrently, of course, the key primary roles of "father," "mother," etc., continue to operate and provide social stability. These processes can be foreseen and should be taken into account in preparing for mobilization for recovery of a post-nuclear-attack society.

Many questions remain open-ended, then, in this scheme for creating and setting in motion a distribution mechanism to energize society-wide recovery. Our general knowledge of men as social and cultural beings, however, helps us to influence the direction and form of those processes which intervene between men and their organized technologies. Significant questions are: How can the distribution mechanism be supportive of primary, family roles, and of primary-group linkages (between members of a society) which are not discordant with the development, in survivors, of a society-wide perspective? How can recovery-related work and occupational roles be communicated and supported as the most significant public roles in a post-attack social system? How can a post-attack social system--more correctly, post-attack social systems--configure into a society-wide system of relationships that orients all surviving human resources to one another in their shared situations as members of the larger society? While precise answers are not possible when one is dealing with the recovery of a pluralistic, multi-valued society, the distribution system can take heed of the basic needs of survivors for social supports.

Needs for Support in the Post-Attack Environment

Post-attack workers and consumers would have social-psychological needs that are normally met by the pre-attack social system. To the extent that a distribution system could satisfy those needs, it would be reinforcing the development of adaptive institutions. More immediately, it would enhance its own acceptability in the eyes of survivors--hence it would motivate survivors to work in the recovery effort. It will be noted that the needs are stated below at a general psychological level. This reflects their origin: The literature on consumer behavior in disaster indicates that these elements are critical to the definition and acceptance of positive roles in a threatened social system.

It should also be noted that needs so stated offer no particular clues to the best form of organization. Rather than insights into the phenomena of social control, they are posited as social-psychological factors that should be monitored--attitudes and forces to which the distribution and other recovery systems should be responsive. The complexity of that response is one reason why recovery should be thought of as a set of enabling, not command-control, mechanisms. Six general social-psychological needs of survivors are discussed below.

(1) Protection. Survivors must perceive that a given government, group, system, or whatever can provide for the protection of the primary group, other people, property, social position, symbols of previous achievement, and so forth. Where such protection is not associated with one arrangement, the tendency is to search for other arrangements or to provide the protection by personal or small-group activity.

(2) Stabilization. This requirement represents another aspect of the preceding one--protection against uncertainties of supply, against disorder, competition, and economic upheaval. An important element in the perception of stabilization is the principle of "insurance"; that is, the survivors would judge an arrangement or system by its perceived capability to guarantee that protection and stability would result from its functioning.

(3) A View of the Future. Two aspects of an individual's view of the future have particular relevance to his motivation in the disaster environment of the present: First, he requires information and forecasts about future risks, opportunities, and developments, that he may prepare for them realistically; second, his confidence depends on his perceiving prospects for improvement and a reasonable expectation that personal goals can be set and reached.

(4) Independence. Many stresses, even in "normal" conditions, can be related directly to the fact of dependence, or the inability to be economically or psychologically self-sufficient or self-supporting. The perception of relative independence, like the view of the future, is related to the values by which an individual would judge a system or arrangement for recovery or distribution. Where alternatives to a nationally organized system were available or might emerge, the individual's choice among alternatives would be influenced by these factors reflecting his self-esteem.

(5) Conflict Resolution. Role conflict is aggravated by disaster and requires choices among responsibilities to the primary group, to secondary groups, and perhaps to alternative roles during the recovery effort. A critical criterion by which a system would be judged acceptable or otherwise would be its provision for the resolution of such conflicts. That is, individuals would require standards by which to determine their responsibilities in various quarters, such as the national recovery effort and the community--standards that allowed such resolution without producing a feeling that primary group responsibilities were being avoided.

(6) Relief. "Relief" here refers to release from commitments that the individual cannot carry over from the pre-attack environment and support for those that he cannot avoid in the recovery environment. Many commitments--financial, legal, and moral--would doubtless be retained, but people would need to be released from commitments that reduced motivations conducive to post-attack living and reconstruction. To the extent that pre-attack commitments (for example, debts) were legitimately or legally reduced during the recovery period, the burden of post-attack commitments would be reduced, as would the tendency to take advantage of disaster to shed pre-attack commitments. That tendency could otherwise produce deviant behavior, and attendant guilt and frustration, at a

time when such behavior could be disruptive of an organized recovery effort. In short, participation would be encouraged, and acceptance promoted, by (a) supporting those individual commitments that individuals did not wish to avoid or could not avoid, and (b) releasing individuals from all commitments, or as many as possible, that conflicted with or placed burdens on their motivations to participate in a recovery effort.

With these six areas of social-psychological need, the discussion has again focussed on the problem of individual roles in post-attack situations. Even when institutional patterns are relatively undisturbed, the effect of disaster is to shift value priorities and produce role conflict. If massive nuclear disaster would have the effect of disrupting institutional and organizational complexes, as seems likely, the psychological aspect of that result would be reflected in the individual's search for roles in the post-attack social environment. The survivor would, consciously and unconsciously, define reference points by which to relate his needs and activities to those of other survivors. He would search for supports in the six areas described above.

And the survivor would be likely to find those supports. Unfortunately, they can be provided in many contexts, in diverse ways. Thus the individual's view of the future could be based on his prospective ability to forage for food. His sense of stability could be defined within a small group or a local community. He could relieve himself of burdens by ignoring responsibilities and commitments. In each case, he would be supporting activities and "subsystems" not necessarily consistent with national recovery or an integrated social or economic operation. In finding social-psychological supports on a random basis, and in local contexts, individuals would define roles that provided them some sense of security and comfort, however shortsighted, but in so doing they would reinforce

the cohesiveness of local or small groups whose activities would not be integrated into a society-wide framework.

In whatever contexts the survivors defined their frames of reference, pre-attack values would continue to be asserted. However, it has been observed that the priorities attached to such values are altered by disaster. Furthermore, different groups and communities place relatively greater value on different aspects of the pre-attack social system. Normally, the overall social system serves to integrate these differing patterns and hierarchies into patterns that serve at least to provide a reasonable national consensus, to allow a nationally integrated economy to function, to establish criteria for law and order, and generally to provide a sense of national purpose and identity. Massive disaster portends the disruption of that overall system, thereby encouraging the establishment of more localized frameworks in which small groups could emphasize relatively particularistic expressions of values. Add to this picture the fact that different communities would experience disaster in different forms--for example, some would see personal property destroyed and others would not--and the potential development of "islands of mutual hostility" is apparent.

It is possible to encourage individuals to find roles and define relationships, consistent with society-wide recovery, by means of a distribution system. When the spontaneous reactions of individuals would tend to enhance local or small-group orientations, the distribution system should use its peculiar influence on motivation to insure that roles are perceived in a national context. The process would also have the inverse effect of encouraging cooperation in the system's operation, if individuals found these six ingredients of post-attack role definition in the system's effect on them.

The Perception of Equity and Legitimacy

A distribution arrangement must be judged "fair" in some sense if it is to be accepted. Standards of fairness in disaster appear to be a function of pre-disaster values. As noted previously, those values are likely to be rearranged to take account of perceived changes in needs and environment. In any case, they are applied to the judgment of the distribution policy, its administration, and the evidence of lapses in administration that permit violations of the public policy.

Practices and policies in disaster are generally judged by whether they conform with values acceptable in light of a given system. This practice reflects the facts that (a) it is not a simple matter to predict which pre-disaster values or patterns of values would be dominant, and (b) post-attack or disaster values are likely to vary, given free rein for their expression, from one individual to another and from one community to another within the society.

While it is not possible to determine beforehand the precise value sets that different groups (experiencing disaster in different forms) would spontaneously emphasize, it is possible to describe three characteristics of the process by which post-attack survivors would judge: "Is it fair?" The experience of previous survivors suggests that the major factors in the judgment would include the appraisal of commonality, the effect of differential victimization, and the effects of disaster on social status.

Extraordinary distribution arrangements should emphasize the commonality of the disaster experience. "We're all in the same boat" is a favorable response to disaster--a therapeutic effect that has typically appeared and that serves to legitimize unusual procedures. However, this effect could serve to reinforce local solidarity where a community or group

resisted participation in nationally integrated recovery programs. Implementation, therefore, presupposes that the "boat" be perceived to be the national society. Insuring such perceptions, among diverse groups and communities experiencing different disaster effects, should be a principal task of the national recovery effort. Because the availability of consumer goods would be a primary influence on consumer behavior, the distribution system is a logical vehicle for influencing such perceptions.

Differential victimization is normally a result of disaster, and it tends to work at cross purposes with the therapeutic responses noted above. The literature supports the view that commonality is likely to prevail in the earliest stage following disaster, when the "community of sufferers" reacts collectively to meet common problems. However, as the occurrence of disaster becomes psychologically assimilated--as survivors seek to return to pre-disaster roles and behavior patterns--the consensus breaks down. Thereafter, survivors are likely to perceive that some have suffered more than others, some differently than others. Different criteria for determining equity come into play, and the question of differential compensation for loss becomes a factor in the attitudes of survivors toward the policy of the State.

In both stages of post-disaster responses, differential victimization can become a critical source of favorable or unfavorable appraisals of recovery policies. Differential victimization that is perceived to result from disaster is commonly viewed as calling for differential compensation, whereby the burden of sufferers is seen to be the responsibility of the population collectively. On the other hand, differential victimization that is perceived to result from the activities and policies of authorities is viewed harshly. This seemingly apparent contrast should not be allowed to obscure the subtleties involved in making the concepts operational and

in responding to their implications for the organization and implementation of recovery.

A closely related aspect of the problem of equity involves the effects of disaster on the absolute and relative status of individuals and groups. Changes of pre-disaster status can also suggest inequities that deeply affect the individual's attitude toward post-attack organization.

Where the magnitude of disaster makes restitution unwise or unacceptable, circumstances have by definition reached the point at which new and unusual standards, perhaps conflicting with pre-disaster values, must govern the acceptability of a system or arrangement for social organization. It has been seen that scarcity and other disaster phenomena can lead to the violation of pre-attack standards by individuals and groups. Such violations pose one of the reasons for a society-wide, organized effort. But where such an effort must itself call for a systematic violation of pre-disaster standards, the organized effort may lose one of its sources of appeal--its call to preserve the values of the overall society by concerted rather than disorganized and spontaneous activity. In such cases, the disaster organization or system is in effect asking for the collective acceptance of collective violations of pre-disaster standards.

Acceptance can be attained, even in such circumstances. The ability to meet the primary needs of individuals is perhaps the most important element. It has been noted, however, that the capability to meet primary needs may also be perceived to lie in quarters other than the national recovery system. Unless that system is to be imposed by force, then, it must rely on the acceptance of the standards by which it operates. Where the restoration of a pre-disaster set of values does not appear realistic, the system's acceptance can be influenced by the perceived legitimacy of the processes by which it is created, administered, and

enforced. For example, a system that called for collective violations of pre-attack norms could expect greater acceptance if it were installed by the Congress than if it were imposed by a less recognizably constitutional authority. The example should not be taken as indicative of the subtlety of the point, however, for the perception of legitimacy would favorably or otherwise influence the acceptance of a system at every level of its operation. Thus a system that temporarily brushed aside property rights would provoke extreme opposition on the basis of pre-attack values, but such opposition would likely be reduced significantly if the process included a set of well-known rules and procedures, involving courts or similar bodies to which the interpretation of those rules eventually could be appealed. In short, the effect would be the same, but the appearance of legitimacy would be increased by the use of procedures associated with traditional and familiar processes. As a result, acceptance would be more likely.

Changes of pre-disaster status can also produce disruptive effects or suggest inequities to individuals. It is probable that the lowering of an individual's status generally has unfavorable effects on a system's chances of acceptance, while the raising of an individual's status has potentially favorable as well as unfavorable effects. In either cases, the effect depends both on the motivational effects of the new status on the individual possessing it and on the effects of his new status on the motivation of other people, who see his changed status in relation to their own positions. These essential questions of equity and the perception of equity by survivors, and their implications for recovery management, cannot be explored fully in this report. However, it can be said that the distribution mechanism would be judged in terms of such criteria, and it seems crucial that its design reflect them.

Equitable Restoration and Legitimacy

The standards by which disaster organization is judged equitable or not may be based on the principle of restoration, using pre-disaster norms or values, or on the legitimacy of the process by which new, non-traditional procedures are adopted, administered, or enforced.

The approach labelled "restoration" may be thought of as "taking up where we left off." Policies based on the restorative goal attempt to compensate for the effects of disaster in terms of one or another set of pre-disaster values. Thus some policies compensate for loss--the insurance principle; still others for services, investments, and other economic contributions--the economic principle. The list could be extended. Under each type of policy, the aim is to restore the individual to his pre-disaster position as defined by the welfare, economic, or other criterion used.

Restoration has immediate appeal as a rallying cry, but under conditions of widespread disaster its feasibility could be limited. Restoration presumes, first, that the principle on which it is based (economic, welfare, or other) is generally recognized as the most important aspect of pre-attack society that must be restored. In light of the uneasy equilibrium between welfare, insurance, economic, and other basic value sets in pre-attack society, it would appear optimistic to think one of these criteria would be universally acceptable in the certainly less stable environment of a post-attack society. Restoration also presumes that it would be perceived as possible to restore the pre-attack level of society in terms of one or the other of the principles. Widespread destruction and disruption could make such a hope or goal appear quite unrealistic to those who were asked to accept a particular recovery or distribution arrangement.

These two shortcomings of the restoration approach to equity do, in fact, suggest that restoration could be attractive at the community level,

particularly in the case of an undamaged community where agreement on one principle or another by which to restore the pre-attack society would be more likely. As a result, the adoption of the restoration approach at the national level could be expected to be divisive in its effects on the whole society, as different communities and groups responded variously to the principle or principles chosen as a basis for restoration.

In summation, it appears that the principle of restoration would not be feasible where the communities of a country had experienced different effects of a nationwide nuclear disaster. Whether or not policies resembling restoration were attempted, the perceived legitimacy of the process by which distribution were effected (and recovery implemented) would be a crucial factor in the acceptability of a distribution system. Determining and designing such processes is apt to be one of the most difficult tasks facing recovery managers, as the following examples should suggest.

The Problem of Equity and Legitimacy: Two Special Cases

The appearance of legitimacy and equity, it has been pointed out, is not readily attained under conditions of massive and nationwide disaster that would affect different individuals, groups, and communities in different ways. While this report cannot describe in detail the ramifications of differential victimization, status changes, and related phenomena in the post-attack social environment, it is possible to suggest their implications with respect to two cases: the care of public dependents and the psychological impact of economic loss. These cases have particular relevance to the problem of characterizing an acceptable distribution system, involving as they do the question of equity in the distribution of goods and the impact of unusual economic arrangements that contrast sharply with

traditional attitudes toward personal wealth--attitudes which are tied in turn to behavioral factors related to the individual's sense of "security," the group's attachment to status, and the community's appraisal of what is "worthwhile."

(1) The Care of Public Dependents. Following nuclear attack, it is probable that a greatly increased percentage of the population will fall in the categories of orphans, the disabled, and the dependent elderly. (The latter groups, presumably, would be enlarged by the addition of those who had previously lived from savings, investments, and so on.) In the case of the young, these dependents would represent an important resource of the recovering society, and the humanitarian values of the pre-attack population could be expected to survive and demand some provision for the welfare of the other groups. It follows that an acceptable distribution system must make provision for these groups.

Merely to rely on the survival of humanitarian values, however, is to overlook the complexities underlying the relevant attitudes. Would a mass orphanage plan conflict with values placed on the raising of children in private homes? Were such orphans a large proportion of the population, that response is not unlikely. Would groups and communities strive to support "their own" dependents, conveniently turning pre-attack humanitarianism to the purpose of rationalizing the selfish hoarding of resources? In light of the tendency for the localized community to consolidate as a community of sufferers--emphasizing values that afford solidarity within the immediate, visible environment--that inversion is a not unlikely occurrence in the post-attack situation. Because these problems are so immediately tied to the job of the distribution system, its designers should take account of their implications if they wish to insure the system's acceptability.

(2) The Psychological Impact of Economic Loss. Because it would be perceived as an essentially economic mechanism, the distribution system would be judged in relation to other economic consequences of disaster and recovery. To a greater extent than the rest of the recovery management system, the distribution system would have focussed on it the reactions of survivors to economic loss, downgraded status, and perceived differential victimization.

Even in its quantifiable aspects, such individual loss is not accurately reflected in statistics on per capita output, gross national product, and similar measures. For example, shares of stock typically reflect discounted future earnings and have worth, to the individual owner, of several times their corresponding share of the corporation's book value. Or property is appraised and used for security on the basis of market values reflecting current demand. Under such circumstances, it is unlikely that an adequate measure of total individual loss from nuclear attack could be devised. But it is significant that individual survivors would have experienced considerably greater loss than economic indexes would indicate.

It is still more significant that individual economic loss would be magnified by its psychological impact. Examples are obvious: Social leaders whose positions were related to their economic assets would often lose the basis for their previous positions; recovery would likely emphasize jobs formerly accorded lower status and de-emphasize many white collar functions; individuals who formerly derived their sense of security and societal role from property ownership would see it destroyed or unlivable.

Such psychological impacts of economic change have customarily been reflected in political attitudes and are familiarly associated with "extremist" behavior. Because it would deal with an obviously economic

activity, the distribution system could easily become the object of resentments reflecting the psychological impact of economic change. Presuming that other societal institutions would be shaken or disrupted, few generally accepted institutional frameworks would exist to channel, modulate, or harmonize the effects of these forces. It therefore seems advisable to build into the system the greatest possible number of traditional mechanisms and values for countering or "rationalizing" such tendencies. If the distribution system served its purpose of "enabling" society to adapt its structure to the new reality, these mechanisms could be viewed as stabilizing devices that provided continuity in the process of adaptation.

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VI. IMPLICATIONS FOR CIVIL DEFENSE PLANNING

In analyzing disaster behavior with respect to the design of a post-attack distribution system, the study has considered many factors that have implications for the overall conceptualization and design of post-attack organization for recovery. Those implications are stated at three levels.

(1) At the Psychological Level. With respect to obtaining food, survivors will be highly concerned with how they can provide for themselves and their families immediately and, most especially, in the uncertain future. The uncertainty surrounding the sources and availability of future food supplies is likely to lead to hoarding, competition for scarce resources, and other selfish and uncooperative forms of social behavior. Countering this tendency would be the cooperative, altruistic, and unselfish behavior one tends to find among a "community of sufferers."

For survivors, the whole context which defined and gave meaning to their pre-attack work activities would be substantially altered, and pre-attack expectations of the normal exchange relationships would be perceived as no longer valid. The preponderance of evidence suggests that survivors are likely to manifest psychological states adaptive to post-attack conditions. This is not to say they would behave in ways most consistent with societal recovery requirements, because behavior will be dependent not only upon psychological predispositions but also upon the information, knowledge, facilities, and direction available. To the extent that appropriate recovery activities in post-attack situations place requirements on survivors for knowledge and facilities they do not possess, the appropriate behavior cannot be expected. If suitable pre-attack preparations and provisions

for effective guidance in the post-attack situation are not made, the natural motivations of survivors are likely to lead to behavior which is counter-productive of societal recovery. If, however, appropriate pre-attack preparations are made and means are provided to exert effective guidance and direction in post-attack situations, the findings support confidence in the proposition that individual survivors can be induced to participate in required tasks.

(2) At the Community Level. Shifting from the individual to the community, a similar pattern is noted. Variation will occur as a function of pre-attack differences in communities and different attack effects on them, but the general picture that emerges is parallel to that at the psychological level. In the event of a nuclear disaster, the evidence would suggest that a rapid sloughing off of organizations and activities irrelevant to the problems posed by the disaster would occur; barriers to intra-community communication would disappear; skills and capabilities relevant to survival and recovery would replace prior bases for assigning status in the social organization of the community; emergent disaster-oriented organizations would develop rapidly; and attention would be focussed on immediately visible and concrete problems facing the local community. In effect, a local social structure and a local culture oriented toward survival and recovery would appear. In general, this is a healthy and hopeful picture at the community level. It does not in any way deny the peculiar horror that a local post-attack situation can produce, but it does indicate the resilience that the human species has displayed individually and collectively in the face of massive disaster in the past.

However, one of the major problems confronting the local community will be gaining access to needed resources outside its own locale and allocating the resources available. Community problems are likely

to be defined in a purely local perspective, and solutions are apt to be considered in purely local terms.

(3) At the Societal Level. While they tend to be adaptive for the situation where the community has suffered a major disaster within an otherwise intact society, the spontaneous activities one expects of individuals and local communities are likely to be counter-productive with respect to recovery of society as a whole. The basic reason for this is the lack of a society-wide perspective at the local level.

Without some external means, the survivors in Des Moines can not coordinate their activities effectively with those of survivors in San Diego and Atlanta. But to a certain extent such coordination will have to occur in order for production, distribution and vital service capabilities for the society as a whole to be rapidly regenerated. The survivors in St. Louis may not perceive that clearing rubble from particular highways or repairing a railroad bridge over the Mississippi are critical activities for them to undertake. In terms of what is required for societal recovery, however, those tasks may be the most critical in the St. Louis area. Other time-dependent, critical tasks, from which the people of St. Louis as well as the rest of the country would ultimately benefit, may be contingent on the completion of such high-priority tasks. But the people of St. Louis, Des Moines, Atlanta, and San Diego can be expected to have locally oriented perspectives on what needs to be done, and they are not likely to comprehend the critical needs of a badly damaged society nor the part they should be contributing to a national effort to restore vital technologies.

Managing national recovery under post-attack conditions is clearly a more complex undertaking than, for example, the management and direction of the national effort in World War II. The effort would require that

some critical recovery activities be centrally directed, coordinated and managed. Taken together these factors point to the crucial problem in implementing national recovery. It is one thing to identify and specify what, where, and when critical recovery activities must be undertaken. It is an entirely different thing to mobilize the human resources needed to carry out the effort, and to motivate them to relevant, concerted action.

Human Disaster Responses: The Needs of Survivors

This study has focussed on a possible mechanism for implementing recovery. That mechanism is a distribution system for linking individual workers and consumers to a nationally oriented program of activities that would be required if societal recovery is to occur.

At its most basic level of impact, the distribution system considered in this study is largely a command-control apparatus. However, any system must be actively supported by the population if it is to be effective. Hence the system should be designed to insure its acceptance as an effective and fair response--the best response--to the needs created by disaster. Furthermore, one cannot completely "command" the recovery of a society and its institutions, for as the diverse aspects and modes of societal living "recover," many new forces and voices are made manifest and serve to qualify the command-control model of how issues are defined, decisions reached, and actions taken. Finally, the disruption of traditional institutional processes and structure would leave individuals without many societal supports that previously allowed them to define roles, express value judgments, and act accordingly. The distribution system, on which public attention would automatically be focussed, could articulate elements of an institutional framework that would provide some basic societal supports during the period when traditional institutions might be incapable of functioning effectively in the changed environment.

To meet these needs--and thereby to increase the probability of its acceptance--the distribution system should be thought of as an enabling system for societal recovery. Its command-control elements, conflicting with customary pre-attack practices, themselves add weight to the system's need for other elements whose presence would elicit favorable public judgments of (and resulting support for) the system's operation.

Support for three propositions has been presented in this report: (a) the postattack environment will present conditions of scarcity and/or perceived scarcity, (b) the scope of disaster will be such as to shatter vital elements and complexes which are interdependent in the total society, and (c) societal recovery would depend on the interdependent, time-phased activities of individuals and communities throughout the nation. From those propositions, four general goals of system design have been inferred:

- Goods must be distributed in a manner that encourages or requires the participation of workers in nationally oriented activities.
- Operations must be possible under conditions wherein pre-attack institutions have partially or largely collapsed.
- Worker-participants must perceive the system as equitable in its effects and legitimate in its claims on their energies.
- Operations must be capable of flexibility in degree and scope and based on continuing sensitivity to changing environmental and social conditions.

The report has established a number of forces and attitudes that would be characteristic of the milieu in which the distribution system would operate. The most salient of those characteristics are the following:

- The dominant motivation of individuals would be the satisfaction of primary group needs.

- Spontaneous individual reactions would be expressed in activities perceived to provide for primary needs in a direct, visible and concrete way.
- Such direct relationship between activity and need satisfaction would be perceived in the context of small-group and community activity.
- To the extent that pre-attack institutions collapsed, the importance--for motivation to action--of the non-national contexts would be accentuated.

In this field of potentials, the distribution system must link the productive tasks of individual workers to a nationally oriented program of recovery activities. The strength of those links can be increased by two effects of distribution: first, satisfaction of the worker's perceived needs; second, reduction of the perceived capability of other activities available to the worker to meet his needs. Thus, the basic dynamo of recovery reinforces more and more energies toward organization in the society-wide system at the same time that it diminishes energies working toward disorder.

The reinforcement of a nationally oriented recovery effort by the distribution system requires that its operations serve to satisfy human needs that may be categorized under four headings:

- The need for food and other consumer goods.
- The need for a sense of role in the disaster environment and national recovery effort.
- The need for information that allows the definition of society-wide perspectives.
- The need for distribution to be equitable in its effects and legitimate in relation to the values of the post-attack population.

To satisfy these needs the system must have technical capabilities in two areas: the physical distribution of goods and the use of information. While the first is an obvious requirement and not directly of concern here, the role of information can be broken down into several components that are relevant. First, of course, information must be exchanged in the everyday course of distributing goods. This capability would be defined internally in accordance with system operating needs. Second, and much more important here, information must be collected and disseminated to meet the non-physical needs of the population. Information must be disseminated to dispel uncertainty, to familiarize the population with distribution arrangements, to provide a meaningful national context for local activities, and otherwise to publicize the ethical criteria and political process by which goals are set, decisions made, processes "legitimized," and so on. It is this aspect of information that places an unusual technical burden and important social responsibility on system operators.

(1) The Need for Food and Other Consumer Goods. The basic need for subsistence, and for the perception that subsistence will continue to be available, is a primary group need, hence a fundamental source of motivation in disaster. It has been established that the spontaneous response to scarcity and disaster is the attempt by individuals, small groups, and probably whole communities to engage in activities perceived to promise direct relief from the threat of scarcity. Those activities may range from individual theft and hoarding to collective action that is highly organized but socially dysfunctional from a broader perspective. To offset the inducements of such activities, the national recovery program can offer rewards for the performance of critical recovery activities. However, the more spontaneous types of activities noted above are likely to be perceived as offering the more concrete, immediate, and direct rewards.

The objective of the distribution system, quite simply, is to provide for primary group needs by offering rewards for participation in critical recovery activities while reducing the perceived possibility that those needs can be met by competing forms of activity.

(2) The Need for Role in Environment. The distribution system must distribute goods clearly under the auspices of the national recovery effort and directly in conjunction with the individual's performance of critical activities. Every effort should be made to insure that the satisfaction of primary group needs is perceived as directly related to the performance of work in the recovery effort. This also implies that the system take account of the factors that would influence the decision to hold a job. Aside from considerations of economic role, the system must establish a sense of social role that is related to recovery jobholding. It is suggested that, through functions of information flow and processing, a system for enabling recovery could promote the articulation of a society-wide social structure and culture in which traditional values and institutions could be adapted to the needs of recovery.

(3) The Need for Information that Allows the Definition of Society-Wide Perspectives. The distribution system should have the capability of supplying information that will suggest to individuals an overall societal structure that complements and supports the economic recovery effort. Furthermore, because groups and communities would be in a position to supply information that reflected a non-national orientation toward the critical recovery effort, the national distribution system must be equipped to control the flow of credible information to individuals. Essentially, the system should be able to define for survivors what has happened to the nation, what is being done about it, and how individuals should and must participate.

(4) The Need for Distribution to Be Equitable in Its Effects and Legitimate in Relation to the Values of the Post-Attack Population. Legitimacy becomes a matter primarily of the relationship between recognized political process and the requirement for a nationally integrated recovery effort. Where our knowledge of likely values and our capacity to account for real individual losses are limited, it is yet safe to predict that the distribution system should be very public in its operations, that it must have mechanisms for judging and punishing violations of its rules, and that it be capable of redressing grievances under the rules governing distribution. At least for the goods being distributed by the system, familiar concepts of ownership would operate and "due process" would be insured to participants. The question of legitimacy gives rise not to capabilities but to characteristics of the system. It has been established that need satisfaction would lead to the toleration of departures from pre-attack norms. The basic toleration of highly centralized authority, however, would be far from automatic. Pre-attack value judgments would in some cases conflict with the imposition of overriding national authority, and the natural proclivities of disaster-threatened survivors would also lead them toward non-national activities and orientations.

To meet the needs for perceived equity and legitimacy, it is suggested that--as a minimum--the system should be established under the auspices of the highest constitutional authorities, continuously and publicly overseen by the Congress, have well-publicized goals for its termination, and utilize pre-attack organizations and forms wherever these can be integrated to the system's purposes.

The Characteristics of a Post-Attack Distribution System

The objective of this study has been to identify the characteristics that a post-attack distribution system should have if it is to be used to facilitate

recovery. The list below is an attempt to summarize the characteristics identified in this study.

1. The distribution system must be equipped to monopolize the existing supplies of food and other critical goods.
2. The distribution system must be equipped to provide security for supplies of goods at every stage of their processing and distribution.
3. The distribution system must have the capability to satisfy primary group needs directly and in conjunction with the participation of workers in critical recovery activities.
 - a. The distribution system must be equipped with a means for the unique identification of workers.
 - b. The system must be equipped with a means for unique identification of the worker's family.
 - c. The distribution of goods to the worker's family should be linked directly to the worker's reward for participating in the national recovery effort.
 - d. The rewards for critical recovery work should be differential with respect to risk, skill, and other "non-economic" considerations normally associated with jobholding.
 - e. To the extent possible, the rewards for critical recovery work should not represent a downgrading of the individual's pre-attack status (in relation to that of other workers in the recovery effort).

- f. The rewards for work in critical, nationally oriented activities should be higher than the rewards for work requiring similar performance, skills, and so forth in less critical activities.
 - g. Wherever possible, the worker in a critical recovery activity should be brought into direct contact or direct communication with his family.
(This capability implies that, wherever possible, the worker be given the option of living with his family--perhaps by assigning the position or moving and housing the family accordingly--or that direct communication by mail, phone, or other means be established.)
4. The distribution system must have the capability to communicate information from the national level to the individual level.
- a. The system must describe the disaster itself--the amount of damage and resulting problems--emphasizing a national context but also describing local situations within that context.
 - b. The system must describe the survival of people and resources, focussing almost exclusively on national totals of population, industrial capacity, and so forth.
 - c. The system must describe those external post-attack threats that are clearly directed at the nation as a whole.

- d. The system must describe internal threats--for example, the scarcity of resources in relation to the projected period required to resume production.
- e. The system must interpret and describe the goals of the recovery effort almost exclusively in terms of national goals--for example, the attainment of certain levels of food production or the re-establishment of basic facilities.
- f. The system must describe interdependencies in the recovery effort, demonstrating the mutual dependence of communities and groups within a national framework.
- g. The system must describe the critical recovery activities, establishing their priority on the basis of the interdependence of the recovery effort (f).
- h. The system must describe the distribution arrangement by which primary group needs are related to work rewards.
- i. The system must describe the arrangement for distributing food and other goods to public dependents.
- j. Description of the post-attack environment and the structure of the recovery effort must begin immediately after the attack, before informal information systems, spontaneous responses, and rumor become established as guides to activity and perception.

- k. The system must have continuous and direct access to sources of information indicated above, including information about the actual performance of critical recovery activities.
- l. The system's information must be up-to-date and accurate, especially where descriptions of local conditions afford individuals an immediate criterion for determining the reliability of its information.

(Accurate reporting and information are prescribed here, not for ethical reasons, but because the credibility of the system's information would directly influence the individual's perception of the system's capability, hence its usefulness or potential usefulness in satisfying primary needs.)

- 5. The system should have the capability to process for credibility the communications to individuals that do not originate with the system or conform with its objectives--that is, it should be able to monitor all public communication and counter the effects of misinformation with accurate, timely information.
- 6. To satisfy the need for perceived equity, the distribution system must have the capability to record publicly each exchange of work for goods and to judge whether a particular exchange conformed to the rules of the system.
 - a. The system must identify unique exchanges or transactions and record them.
 - b. The system must have rules and procedures for judging whether violations have occurred.

- c. The system must be capable of punishing violators.
7. The distribution system must have the capability to satisfy the subsistence needs of public dependents.
 8. To prevent possible disorder arising from random efforts to retrieve or enhance pre-attack economic positions or status, there should be publicized rules for insuring continued ownership of surviving property, for resolving (eventually) inheritance problems, for relieving individuals (at least temporarily) of pre-attack economic obligations, and for providing some degree of restitution when national production affords a surplus from which to make restitution.
 9. The distribution system should be established under the auspices of the highest constitutional authorities.
 10. The distribution system should be continuously overseen by councils of representatives of different areas and communities--for example, the Congress or a body under its immediate supervision.
 11. The distribution system should be equipped with mechanisms and criteria for appraising the criticality of conditions that call for the use of the system itself; clear guidelines should indicate when the system may safely be replaced by more familiar distribution arrangements; and those guidelines should be continuously publicized. (In effect, the system should be designed so as to facilitate its gradual absorption by more traditional institutions--its demise when conditions no longer require that such an arrangement be continued.)

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13 ABSTRACT <p>This study is concerned with the problem of securing the participation of the survivors of a nuclear attack in an organized recovery effort. It describes the potential effects on motivation and organization of the different localized perspectives in which individual survivors would view disaster and respond to demands for nationally oriented work activity.</p> <p>The study assumes that recovery would require the integration of recovery activities on a national basis, that forcing functions of time would be placed on the performance of critical recovery activities, that survivors would perceive a scarcity of consumer items (especially food), and that the natural proclivities and motivations of survivors would lead them to engage in activities other than those required by an integrated national effort. Given those assumptions, the report describes a set of <u>system characteristics</u> that would, if built into a distribution system for consumer goods, allow the system to perform two tasks: (1) meet consumer needs and (2) provide the means for guiding the postattack behavior of survivors toward the performance of critical recovery activities.</p>		

14. KEY WORDS	LINK A		LINK B		LINK C	
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