ON REORGANIZING AFTER NUCLEAR ATTACK

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PREFACE

Research during the past six years on the damage limiting potential of civilian and military defense systems has brought about a drastic change in my view of the threat of nuclear attacks against the United States. This research has led me to the conclusion that highly effective civil defense systems can be designed and programmed with an astonishing cost-effectiveness and, for most of the kinds of nuclear conflicts which are now being anticipated, would have the potential for keeping civilian fatalities very low -- that is, of the order of a few million or less, possibly much less. Justification for this view is offered in References 1 and 2.

However, if the population survives a nuclear attack which destroys or severely damages hundreds of U.S. cities (including all the major ones), can the United States then recover in a meaningful sense and within a reasonable time (say, 10-20 years)? In pursuing this question, it appeared that there might be a special vulnerability in the social structure which would cast doubt on many recovery estimates -- a vulnerability which is related not to physical assets but to organizational problems. This vulnerability is examined in this paper and is found to constitute a major threat -- but a threat which might be substantially reduced by appropriate countermeasures. In many scenarios these countermeasures could be implemented during a crisis by coordinated action of a mobilized population -- but at this time the effectiveness of such a program cannot be accepted with high confidence.

This paper in somewhat different form but with essentially the same major concepts was briefed in November 1967 at RAND's current Strategic Seminar series and previously at an N.A.S. symposium on Postattack Recovery. The original research was done at the Hudson Institute and has been submitted to the Office of Civil Defense in a paper entitled, "Emergency Mobilization for Postattack Reorganization" (HI-874-RR, draft).

Any views expressed in this paper are those of the author. They

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I. A PERSPECTIVE FOR POSTATTACK RESEARCH

A. Spasm Wars and Civil Defense

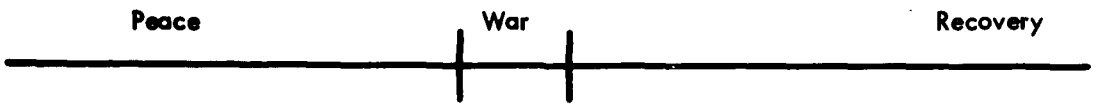
It may be useful to examine some of the conceptual approaches to PA research with the assistance of Figure 1. Part A of this figure shows a time-scale for contemplating CD problems broken into the three intervals: peace, war, and recovery. From 1945 to approximately 1960 most analysis of CD problems was pursued within this framework which assumes that a nuclear attack would be a strike-out-of-the-blue and would allow only from minutes, to possibly several hours, before any region experienced hazards of the nuclear attack. This concept establishes a preconception that, for nearly any aspect of survival or recovery, any countermeasures must be taken during times of peace.

Even assuming the validity of Figure 1-A practical difficulties arise. The large sums required for effective CD systems (billions) have not been obtainable and probably will not soon be.

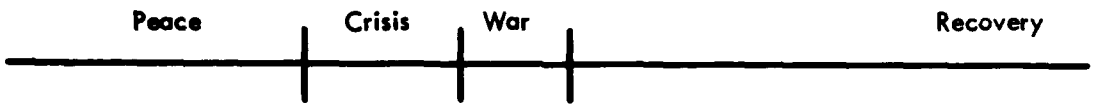
B. Deferred-Cost CD Programs

In the late 1950s, some analysts began to examine cases in which a war was preceded by a period of international tension (Figure 1-B). This possibility seemed to have a number of military consequences. As more studies began to consider this alternative, the notion became increasingly widespread that nuclear war preceded by crisis was not only "not unreasonable" but might be much more probable than a "sudden" war (Figure 1-A). It has since been argued that if a choice is necessary, Figure 1-B should replace Figure 1-A

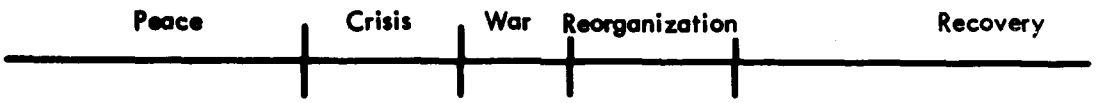
A. (1945 - 1960)



B. (1957 - PRESENT)



C. (1966 - PRESENT)



D. (1967 - PRESENT)

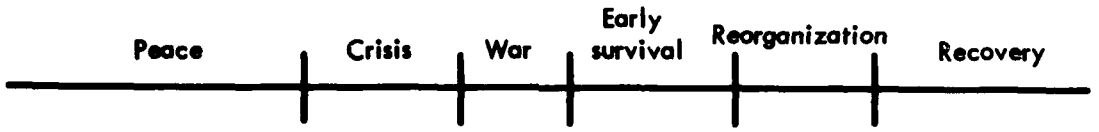


Figure 1

as the standard basis for defense planning.[1] This perspective has persisted up to the present and has won wide acceptance among strategists, although in some studies not much more than lip service seems to be given to the concept while the analysis mainly proceeds on the basis of Figure 1-A.

For CD, the acceptance of a crisis period as a basis for research and planning complicates the picture by introducing many new response options. However, as a positive aspect, it enables analysts and planners to see a potential for designing low-cost systems which may enable nearly all the U.S. population to survive a nuclear attack.[2] Even survival in the 95-99% range does not now seem a ridiculous outcome for attacks in which a few thousand megatons are directed against urban centers. In addition, and of most importance for this paper, the visualization of Figure 1-B opens new ways to think about effective recovery planning.

The basic notion is that the systems for survival and recovery need not necessarily be built during peacetime. Figure 1-B implies that plans might be made in peacetime for a general emergency mobilization of the population which, during the crisis interval, could provide the labor and material resources to build rapidly the CD system. Presumably, a reasonable portion of effort during this interval would be allocated to phasing in measures which would improve our ability to recover.[3] A tantalizing aspect of this concept is that it introduces the possibility of deferring to the time of need (when, presumably, funds would be readily available) the major costs of systems which, if built in peacetime, might cost tens of billions of dollars.*

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* Of course the costs at the time of need may be greater than those involved in the construction of a peacetime system. Whether the system would be more or less effective than one constructed in peacetime would depend upon the factor of obsolescence and the specific war outbreak scenario under which the system would be "tested."

The argument is that at the present time CD seems to have little choice, if it is to obtain a highly effective defense, but to adopt a deferred-cost plan based upon rapid mobilization of the skills and physical resources of the nation. Thus, no unreasonably, it would seem, a next logical step in the development of CD would be to add a capability, through preplanning, to phase in an emergency mobilization of the population in response to a future nuclear emergency.

C. Postattack Reorganization Period

Creeping into current PA research is the orientation shown in Figure 1-C. The main point is the introduction of the reorganization period.

Some previous studies of recovery have concentrated on the reorganization required in a single "institution" (government, petroleum, steel). Generally it has been concluded that none of the problems are insurmountable, and that usually special preparations can be made which would speed up the recovery. However, what may be valid if problems are handled singly may be false if many problems must be solved simultaneously. For example, it is usually assumed (implicitly!) in such studies that (a) the government is intact, (b) money and inflation problems are not important, (c) credit is available, (d) prices and wages have been settled, etc., etc.

Although going from Figure 1-A to Figure 1-B gave us a framework with a greater potential for solving some survival and recovery problems, the concept of Figure 1-C further complicates the post-attack picture by emphasizing the need to worry about the reorganization phase. We find it conceptually distinct from any study of recovery which assumes that the survivors can function effectively without having to solve some basic organizational problems first. It will be argued that reorganization problems precede and often would dominate the question of PA economic viability. If this is correct it should follow that these problems deserve high priority in future PA research.

It should be apparent that the effective functioning of long-term recovery plans would first require that the economic reorganization has been effectively accomplished, certainly to the extent that (a) certain elements of the federal government have been restored; (b) that a functioning money system exists; and (c) that the manpower can be obtained for the implementation of the emergency government functions. Subsequent discussion will claim that these conditions may be difficult to meet in some environments and that if they are not met a major PA threat would exist.

II. POSTATTACK SOCIETAL PROBLEMS

One worry is that while there may not be sufficient survivors or capital for recovery to take place readily (i.e., a potentially viable economy in Winters' terms).[4] Perhaps the social disorganization would prevent the effective use of the remaining assets and society would disintegrate by losing its "identity."

We will attempt to define this potential threat to PA society by presenting a number of allegories or metaphors. Hopefully, this approach will add some clarity, improve our perspective, and thereby help decide whether this matter deserves increased emphasis in future research.

A. Environmental Shock and Personal Identity

The structure of human personality may be defined by the continual reinforcement of its identity through daily experiences. That is, by frequent interaction one comes to believe certain people to be friends, acquaintances, or enemies; he knows what work he can or does perform by his employment, hobbies, and chores; he knows humor by the events that amuse or entertain him and others. Without conscious thought he "knows" many of his functional roles, such as father, husband, gardener, accountant, commuter, skier, Catholic, Republican, neighbor, driver, voter.... Each of the major roles themselves break down into a set of functions. Thus, without having to think, it is important to know how to get breakfast, how to respond to routine questions, how to fill out forms, how to drive an automobile, how to go to work, how to react to a greeting, what a buzz on the intercom means, how to buy supplies for work and home, what to expect in a restaurant, or theater.... Thus there are thousands of daily functions by which an individual establishes his current identity. These functions are supplemented by the simple recognition through the senses of a house, lawn, mountain, tree, river, road, person, typewriter, violin, fire, perfume, etc. -- all of which help remind us of who we are. The point we are trying to illustrate is that in

a major sense, while always changing, a person's current identity is established by a frequent sensory reinforcement of his past experiences.

Therefore, it is not surprising to find that many, if not most or all, persons who are subject to various unusual sensory experience (for example, natural disaster, sensory deprivation, drugs) will experience a partial, in some cases nearly total, change in personality which we may call loss of identity if it occurs suddenly. This effect in clinical or medical jargon is expressed as "depersonalization," psychotic break, hallucinatory experiences, etc. Sensory deprivation and drug experiments have shown that some people are strongly affected by such experiences; others are much more resistant.

For our purpose, this description of possible loss of identity through sensory deprivation or other means is meant to be allegorical and to express what we fear could be a parallel in postattack recovery. Thus, a sudden and somewhat massive change of identity may occur among most of the surviving population during or after a large nuclear attack. Individuals removed from familiar surroundings, employment, and recreation would be deprived of their usual roles but not of the responsibility for maintenance of their families. Such a person may "degenerate" into listless behavior, for example, of the kind which has often been associated with occupants of camps for displaced persons. (For example, in Germany after World War II, among the Palestinian-Arab refugees, and currently among relocated South Vietnamese villagers.) Another threat is that many would adapt by reverting to a more primitive, uncooperative, or aggressive behavior leading to riots, gangs, and general lawlessness, possibly leading to a breakdown of law enforcement in many areas -- if not the whole country.

B. Institutional Identity

The identity of an institution, like that of an individual, is generally slowly changing and thus can usually be easily recognized

over short periods of time, months or years. The identity is composed of such things as financial assets and liabilities, employees, buildings and location, products and services, management, internal procedures, and its traditional relationships with other institutions which establish reasonable expectations for credit, sales, purchases, etc. The expectation that change in any of these important aspects will not take place too suddenly or too massively for a reasonable adjustment to occur is important to the preservation of its identity. Thus, if employment changes very rapidly, shock waves travel through the institution and threaten injury. An institution can be shocked by a sudden change in sales when war or peace breaks out or an economic unexpected recession develops. If one large firm goes bankrupt, others related to it may fall like dominoes. Certainly a single massive or sudden change can and often has "killed" an institution. Some are so fragile that they are not even adaptable to the ordinary slow changes of peacetime. (In 1965 about 13,000 economic firms went bankrupt in the United States.)

We are going to ask what may happen to institutional identity under the impact of a nuclear attack and what the implications are for postattack society. As the reader may suspect under many conditions the "answers" may appear to be very grim. At least in the word picture to be presented the grimness will be deliberately emphasized in order to stimulate reflection on the threat.

The PA institutional identity will be affected by what we may term its tangible and its intangible vulnerabilities. The tangible ones include (a) physical damage, (b) loss of personnel, (c) loss of demand for its product or services, (d) unbalance in supplies, fuel, or utilities. The intangible problems tend to be socio-economic or politico-economic and affect institutions whether damaged or not, and could have a much greater impact on the ability of the nation to recover. They may be composed of such matters as:

(1) Loss of credit or solvency

(2) Confusion as to property rights among survivors

(3) Legal problems of debts and unfulfilled contracts

(4) Meaningless wage contracts or salaries

(5) "Temporary" collapse of the federal government or federal authority

(6) "Temporary" suspension of banking

(7) "Temporary" suspension of the judicial systems

(8) Wild fluctuations in prices, rents, or expectations of future prices

(9) Civil disorder arising out of spurious distribution of surviving supplies (and/or surviving capital)

(10) Socio-political and economic uncertainties compounded by rumors and local breakdowns in law and order.

C. Postattack Scenario

This section offers a more specific image of the reorganization problem by presenting a brief postattack scenario. This scenario assumes that no special countermeasures were taken before the attack. It deliberately emphasizes many dire developments which cannot logically be excluded in order to attempt to "feel out" a few horrible, but not impossible, postattack outcomes.

We focus upon a small textile mill in "Parville," an undamaged Tennessee town: preattack population about 40,000; postattack population about 150,000. The attack against cities was about 2,000-MT. Most city people are assumed to have survived through an emergency evacuation and the use of improvised fallout shelters. Four weeks after the attack (late summer) the following situation prevails:

1. Uncertainty about Present and Future:

It is not clear whether fighting will resume. The federal government is a shambles. Washington, D.C. is destroyed. Little provision had been made for emergency postattack operations by the federal agencies.

2. Radiation Threat:

The fallout threat is under control. Most people have left areas of intense radiation. There is confusion and some hysteria

about radiation poisoning, but most people have learned to estimate the threat and are not frightened by low levels of radiation.

3. Presidential Rumors:

The President (and Cabinet) survived in an emergency shelter but his current location is not known. Various rumors claim he has been killed, murdered, imprisoned, committed, hospitalized, emigrated, etc. Actually, the President has been silent because he believes there is a high probability that knowledge of his whereabouts might bring another Soviet weapon on the United States, aimed at him, since the S.U. Premier was killed in Moscow.

4. Food:

There are severe food shortages in many localities and bartering of labor and supplies for food is becoming widespread. People are generally loath to accept money for goods (especially food) at almost any price. It is widely feared that money is and will be useless. Food hoarding is widespread. Surviving banks remain closed. People without food are forming into "action groups." Rumors flood into every community about the location of food stockpiles (private or public) resulting in treks toward these areas.

5. Civil Servants:

It is difficult for the surviving remanants of the government agencies to get their personnel back since they have no current means for paying them except by checks -- in the old (now nearly worthless) currency. Most of their employees are out looking for food and supplies and would be difficult to find, even if someone tried. No solid information exists about when or whether a functioning federal government can be reconstituted. In Parville few city employees have returned to their former jobs -- [illegible] even the police.

6. Early Riots:

About 50,000 people arrive at Parville, between September 15 and September 30 looking for non-existing food stockpiles.

Friction develops between these people, many of whom now believe the residents have already hoarded the stockpiles in secret caches. Riots develop during October 1 and 2, in which a thousand people are injured and three hundred buildings and homes destroyed by fire. The rival groups improvise internal organizations for action and self-protection. Because of time pressure and hostility, effective communications between them is almost impossible. Appeals for state and federal intervention are unheeded because the remnants of government are already overwhelmed by an avalanche of other urgent tasks. The resolution of the local conflict finally comes through a dispersal of both groups to other areas in search of food.

7. Managerial Problems:

The owner of the mill contemplates his problems in trying to restart production. He finds:

(a) many of his former employees cannot be located;

(b) there is much labor available but no one will work for money (a gallon of gasoline trades for about $50 and a can of corn for $70);

(c) the banks are closed and no one knows when or if they will open or even what the banks' business will be if they do open;

(d) he has no useful idea of what factory supplies can be obtained, or when, or how much they may cost, or even what "cost" means;

(e) he has no sales for his merchandise nor any reasonable way of getting any soon, at least that he is aware of. Besides he would not know what to charge for any of the mill's products if he were asked;

(f) he does not know whether he will be solvent or bankrupt when a new balance sheet can be calculated, if it even can. Thus, he reasons, any firm that might attempt to deal with him may be similarly unreliable. Certainly credit cannot be extended -- nor could he expect to get any -- even if stable prices developed, for which he sees little hope;

(g) to help resolve his dilemma, he looks to the local C of C, which in turn looks to the town government, which looks to the county, which looks to the state, which looks to the federal, which is not functioning effectively and some fear is threatened with imminent collapse.

8. Food Distribution:

Although there is no overall food shortage in the country because of extreme problems in distribution, aggravated by a nearly universal tendency to hoard, food stocks have disappeared from usual wholesale and retail distributors. Where feasible, people flock to the farming districts to obtain whatever food they can, which is then either hoarded or bartered.

Because of a shortage of gasoline for transport, there is a huge demand for bicycles, wagons, carts, and beasts of burden for which animal feed is locally available. The farmers are complaining that shortages of gasoline are threatening their capability to harvest, plant, and fertilize. Some are predicting that the next year's crop may be a disaster because of this threat and some shortages of pesticides and fertilizers. Also about half the crop land is considered too radioactive to farm for the next several months.

9. Some Federal Problems:

Economists agree on the need to re-establish confidence in federal money -- that is, to create an expectation of stable and reasonable prices for goods. But there is no agreement on how to bring this about in time. The federal government has been losing its remaining authority rapidly. Rumors abound about currency reform, banks, damage compensation, welfare, starvation, renewed enemy attacks, epidemics, and bacteriological warfare. The government is blamed for the lack of preattack preparations, for getting into a nuclear war, for their current incapacitation, and for hoarding food.

10. Military Dilemmas:

The armed services are threatened with disintegration since their normal channels for supplies have been disrupted and it is not clear how these can be reconstituted. Factories producing munitions are closed, food suppliers are not operating, and teamsters will not work for their preattack contractual wage, if there were goods to transport. (Besides there have been reports about extensive hijacking.)

In addition, most servicemen are worried about their families and are requesting leave (even though transportation is uncertain). They are also grumbling because their pay has become meaningless. The armed services are afraid that if the men do leave, they won't get them back and if they don't leave that they won't be able to feed them.

11. Changing Values:

Law enforcement, preattack style, has become meaningless in most areas. Local police in food-rich communities help defend the status quo against outside "mobs" which in turn may have police assistance from evacuated or food-poor communities. Primary loyalties are to the local group and its leaders who are focusing first on the group's short-range needs. Violence is common when these groups meet. Pitched battles have occurred accentuating the nuclear disaster by forcing survivors to devote a substantial portion of their effort to the problems of local security.

Fear and rumors increase the instability of the accident-prone situations and frequently lead to unfortunate clashes triggered by misconstrued information. Suspicion of outsiders grows to include all of the non-local government efforts -- especially those which attempt to requisition supplies without offering solid or acceptable compensation.

12. Prognosis:

The country is on the verge of a second major disaster --

a collapse of all but local community authority with little prospect of an early re-establishment of the preattack constitutional structure. The prevailing expectation among the pessimists is a total shattering of the country into numerous independent groups which over years -- perhaps decades -- would have to evolve a new federation into the "second U.S.A." The optimists are hoping that an effective federal authority can be reconstituted within a year or two through the imposition of marshal law -- an action which is made difficult by the magnitude of the problem, the inexperience of the army, the weakness of federal authority, and the widespread factionalism and loyalty conflicts within the military forces.

III. EMERGENCY ACTIONS FOR POSTATTACK REORGANIZATION

In Section I the two prominent points were: (1) that reorganization after nuclear war could be very difficult because of "intangible" vulnerabilities; and (2) with modest budgets for peacetime planning much might be done during a crisis to enhance PA reorganization prospects. The first point was illustrated through metaphors and by a stark PA scenario. The second point, which we will discuss in this section, suggests actions that can be taken in a crisis (e.g., stockpiles, training, policies)[3] and offers the possibility of effective countermeasures against the threats of the reorganization period.

A. Stockpiling During Crises

If one visualizes a severe nuclear crisis of weeks or months in duration, during this period stockpiling could become a necessity, that is, a natural consequence of traditional prudential thinking. Thus, if federal or local plans did not exist which would facilitate stockpiling, efforts are likely to be improvised at the time.

There come to mind three major ways in which such stockpiling could be emphasized during a crisis period. They are:

1. increasing production,
2. reducing consumption,
3. increasing imports (and reducing exports).

Thus, production could be increased by a more intensive use of labor. A substantial increase in this production may be possible by increasing (a) hours of work per shift, (b) number of shifts per day, and (c) days of work per week. This development might also require a substantial shift in labor to the more critical industries and an increase in the total labor force.

For example, it may be desirable to greatly increase the production of pesticides and fertilizers. To anticipate this requirement would be important both to the factories that produce these

products and to their suppliers. Indeed, it may be important for many chemical plants to be able to shift some of their normal production into these raw materials. Thus, the rubber industry might be able to shift some capacity to producing insecticides.

The second major way by which we may gain resources for emergency stockpiling is through reducing production of consumption items and durables. We would expect that demand for equipment whose value must be amortized over many years would diminish as the crisis became more severe reducing output of standard producers' durables such as automobiles, trucks, railcars, ships, buildings, turbines, or office equipment.

Rationing may be advisable in order to stockpile rapidly and still maintain an equitable distribution. For example, if it were possible to store large quantities of petroleum products then the government might restrict consumption to, say, half-normal during the extreme portions of the crisis. Rationing might also apply to the control of food products if the government policy wished to <u>discourage</u> the development of individual hoards.

The third area in which stockpiling can be effective is that of imports and exports. In view of both the threatened vulnerability of stockpiles with the United States, and transport limitations, it might be advisable to try to place orders with foreign countries for goods to be delivered to storage depots within those countries themselves. At the same time exports of critical PA supplies would have to be restricted. This policy could assist the rapid build-up of overseas stockpiles of important materials which later could be shipped and distributed as transportation became available. Of course the potential political repercussions of such a policy would first need to be determined in order to understand its limits.

Although crisis stockpiling seems to be a useful concept, one which would appear even more important during a nuclear threat, the creation of stockpiles for recovery may be relatively less critical than the creation of an organization which can <u>effectively manage</u> the

stockpiling needs during and after the crisis period. This, we believe, is an important point. If accepted it should stimulate more detailed study to understand the potential to create rapidly a great organization which (1) would develop as required by the mobilization needs; (2) would be competent to carry out the pre-attack measures needed to enhance survival and reorganization prospects; and (3) would become an entity which, if needed, could take over the major management functions of the postattack reorganization period. (See Section C, p. 19.)

B. Emergency Supports for PA Currency

This section suggests that the feasibility of economic recovery may depend upon the existence of new supports for postattack currency. We argue that a major emergency support for (or replacement of) the dollar could occur through a nationalization of all or some substantial part of the food industry.

The previous considerations led us to worry about the danger of not being able to emerge "intact" from the reorganization phase. As we see it the existence of an effective federal government simultaneously implies a functioning civil service which in turn implies a reasonable short-range confidence in the value of a federal currency acceptable to the public. Thus, we argue, the federal government needs personnel, personnel requires usable money, usable money demands that we have (or are confident we soon will have) an effective federal government. The argument thus seems to be a loop which, once broken, may not lend itself readily to reconstruction. It is somewhat analogous to the simpler chicken and egg story; to get one we need the other. If its personnel disappeared, the government and the money system would also vanish. If the government lost its authority, its personnel would leave and the dollar would collapse. If the dollar collapsed, the personnel could not be paid and would have to leave, and the government would then disappear or

lose its authority.*

If this argument has merit, it is not at all clear that once collapsed the present federal organization could be reconstructed in anything like months (or even years). This postattack environment could lead to independent, competing, and perhaps feuding regions. Civil war could follow -- civil war which could be either intra- or inter-regional. The problems of visualizing a "functioning society" developing out of this environment are so complex and at the moment seem to be so unrewarding that we turn instead to our purpose of examining the preparation needed to prevent the occurrence of such unpleasant possibilities.

It seems that we would need to take appropriate actions to assure the simultaneous continuing viability of the three factors in the government-personnel-money loop. Certainly formal government authority can, in principle, be maintained by simple procedures such as "continuity-of-government" legislation. Second, the desired personnel could probably be maintained or obtained if they are given both preattack and postattack assurances that their services are or will be needed and if they believe that their remuneration will be either in good dollars or their equivalent.

Third, in attempting either to bolster confidence in the post-attack dollar or to supplant it (temporarily?) with an equivalent exchange medium, the federal government may wish to create (probably during the preattack crisis) a separate authority which would be prepared, if necessary, to take over, import, produce, and/or

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* This argument is based on a simplified model of interdependence and examines a pure case in order to make the stark point about the loop of interdependence. While any reality situation would be probably very much more complex involving partial losses of personnel, or severe inflations rather than total collapse, nevertheless, our deliberate purpose here for an initial orientation is to consider very extreme cases which may be nearly the same as the pure one. It is clear that in many historical cases, monetary systems have collapsed without the above consequences. However none of them had both the massiveness and the suddenness of a large nuclear attack.

distribute all items of food. This may amount to creating a capability for the emergency nationalization and operation of the entire food industry. Of course it may not be advisable to implement a full nationalization; at the time partial measures may be deemed sufficient.

If, in fact, the government also succeeded in creating large stockpiles of recovery supplies during the preattack crisis period, it would have real reserves which can be used to back up any new monetary policies which are required to enable the reorganization to occur and the recovery to proceed. Huge stockpiles of food, petroleum products, metals, lumber, paper, medicines, and chemicals would be a far superior underpinning for postattack money than a continuation of present monetary policy.

C. Growth of CD Mobilization Teams

A plausible outcome of a moblization approach would be the early (peacetime) formation of civil defense teams in commercial and industrial establishments; teams which could develop plans for the best specific survival and recovery options. Presumably, these plans could be implemented later in accordance with international developments and national policy.

As a crisis developed, the growth of these teams and coordination with government groups having area and state responsibilities suggest a potential of millions of "trained" people with special training and education in survival and recovery tasks. Of course, a rapid development of this type would severely test our ability for emergency organization and coordination and in this manner suggests an important area for future studies. Such studies, if undertaken, could have two major purposes: (1) the development of plans for assisting the emergency CD effort and (2) the creation of a temporary "paragovernmental" organization to help the government during the reorganization period.

Thus, we have visualized the growth during a nuclear emergency of a loose national organization of trained citizens of millions with which the probability of an effective social and economic reorganization after an urban attack could be greatly enhanced. Also, remarkably enough, it seems not unreasonable to hazard the guess that to develop the research and planning which would facilitate this development would involve only a modest peacetime cost.

For the federal government to be able to give reasonable guidance to local recovery preparations during a CD mobilization would require an extensive program based on prior research. If the research is reasonably funded, the formulation of the problem and perhaps the understanding of feasible countermeasures promises to take recognizable shape out of the murk and gloom which presently hovers about these problem areas. The initial research effort should soon be able to suggest the potential of further study; the payoff could be immense.

Although we have conceptualized a set of emergency countermeasures to prevent or greatly reduce the PA threat posed by the reorganization difficulties, we cannot suggest that more than a low-to-moderate confidence can be placed upon their effectiveness. They may be improperly conceived, improperly planned, improperly implemented, or they may prove to be irrelevant to the actual sequence of events. Perhaps a higher confidence will appear with further study or future developments. At any rate the present cost "estimates" for creating the desired mobilization potential seem to be relatively modest and therefore well worth the investment even as a low-confidence system.

IV. CONCLUSIONS

1. Even though a major fraction of the physical resources survive a nuclear attack, the economic viability of the country is not assured. For want of an effective understanding of the needs of the PA reorganization period, the country could experience economic "starvation in the midst of plenty."

2. The purpose of preplanning for a CD mobilization is to enable it to proceed rapidly and effectively at the time it is needed. Thus, if the preparations are satisfactory the efforts which would promote the subsequent PA recovery could reasonably be balanced and thereby not only make the recovery more likely but more rapid.

3. The appropriate balancing of crisis activities includes the option to create a large emergency organization which could be indispensable if we wish to assure an effective PA economic reorganization. It is argued that if a CD mobilization does prove effective, that it should tend to produce just such an organization; that is, a "paragovernmental" agency of up to several millions of people who are already partially trained through their preattack emergency functions in the skills needed for managing postattack reorganization problems.

4. Another great threat to an effective reorganization following a nuclear attack is the collapse of federal currency -- that is, a nearly complete loss of confidence in the dollar. If this occurred, it could readily be followed by a collapse of the federal civil service and federal authority. It is suggested that preventive actions could include an option to seize the food industry (nationalize it) and, if needed, to operate it during the reorganization period as a temporary federal institution. Some ability to manage this new institution effectively might be provided by the paragovernmental organization mentioned in the preceding paragraph.

5. In addition to seizing the food industry, it is argued that during a crisis period the federal government could begin rapidly building up stockpiles of survival supplies other than food, e.g., petroleum, metals, chemicals, medical supplies. While these goods would undoubtedly have great postattack value, their major utility for the reorganization period would be to provide the federal government with additional "currency" to help assure that the government would survive and function in a way that would meet its major PA responsibilities.

6. In order to provide a solid basis for an industrial role in a mobilization for postattack recovery, local studies are needed in selected industries to uncover their potential for emergency responses within days, weeks, or months. These studies are needed to understand (a) the utility of protective measures to reduce vulnerability, (b) the utility of preattack emergency stockpiling of raw materials and finished products, and (c) the potential of developing talented groups which, through the performance of these emergency functions during a crisis, would provide the large number of experienced personnel needed for a "paragovernmental" organization which would manage the PA reorganization.

7. The complex problems involved in researching and analyzing the requirements for planning a mobilization effort that would greatly enhance a reasonable PA reorganization may require modest federal funding ($ millions, annually) for a decade. It is recommended that this aspect of postattack research should be strongly emphasized in forthcoming years.

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