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While much is known about the impact of bombing on an economy's material ability to produce -- in terms of the physical survival of resources -- comparatively little thought has been devoted to the broader social consequences of truly major bombing. The social and political consequences, however, may well dominate the material or more narrowly economic ones; resources potentially of value may either remain unutilized or may be improperly or anti-socially employed, as a result of the impairment or collapse of our accepted processes of social decision. Our purpose here is to attempt to explore the social consequences of a major bombing disaster, by an examination of the effects of bombing upon the organization of society, upon the distribution of political and economic power, and upon institutions relevant to the effective functioning of society. Needless to say, we can only make preliminary or tentative conjectures (or rather speculations) here, in view of the complexity of the subject and the limited degree of historical knowledge of the functioning of human societies under conditions of extreme stress. Nevertheless, it seems desirable to explore these questions -- since the answers may have important implications for pre-war planning designed to promote the ability of our society to cope with such disasters.

As an economist, the author is all too aware that much of the subject matter here discussed lies outside the field of his professional competence. The excuse for writing anyway is the hope of directing the attention of those more competent than he to this vital, though unpleasant subject.

There has been some analysis of the psychological effects of bombing on the individual level,[1] as well as extensive discussion, in the Strategic Bombing Survey and elsewhere, of the effect of bombing on morale in World War II. Little or nothing, however, has been written of the possible effect of bombing or other major disaster upon the structure of society or popular attitudes toward this structure. One rather good reason for this neglect has been that bombing in World War II did not seem to produce any substantial immediate effect in these directions. Nevertheless, for a truly major disaster -- one, for example, involving hydrogen bombs dropped in a short period of time on our hundred largest cities[2] -- it does seem reasonable to believe that the structure of the national society may be most seriously affected.[3] The bombs will tear great gaps in all existing mechanisms of production, distribution, and finance; they will create hordes of propertyless refugees desperately seeking food and shelter; and at the same time they will gravely weaken our civilian systems of police, administration, and law. In the event of destruction of single cities or of a sharply limited number (as occurred in World War II, where destruction was truly city-wide only in

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1. See I. L. Janis, Air War and Emotional Stress (New York, 1951), passim.

2. This, of course, is not the worst conceivable disaster. We may anticipate that a potential enemy might some day, perhaps comparatively soon, be able to deliver on the order of thousands of such bombs. It appears that, in the absence of radical preparatory measures on our part, survival from such a disaster will be so low that analysis of the post-bombing era may be of little interest.

3. Our hundred largest cities contained, in 1950, 29% of the nation's population. The 100 largest Census metropolitan areas contained 51% of the total population. Very roughly, we may think of the former as the population vulnerable to the physical effects of the bombing, and the latter as inclusive of those directly linked economically with the vulnerable area. These statements should be interpreted only as a broad indication of magnitude; for example, some of the population outside the cities will be physically vulnerable, while some of those inside may not. We shall also generally assume that a substantial fraction of the vulnerable population escapes or survives the disaster.

small number of cases, including Tokyo, Hiroshima, Nagasaki, and Hamburg), the fabric of the national economy and society can support the sectors put out of action; there is serious doubt whether this will remain the case for the 100-thermonuclear disaster considered here.

The leading historical instances in which the entire pattern of a national society was disrupted by a disaster have been military conquests and occupations and true social revolutions. The behavior of the various strata of population in such extreme crises (and especially in interregnum situations after the collapse of one authority and before the firm installation of another) is one promising source for information on which to predict behavior after massive thermonuclear bombing. The other main source, of course, is the bombing experience in World War II.

I. The Immediate Post-Bombing Period

In popular writings on the subject of future bombing catastrophes, a picture of a near-complete collapse of civilized society is often painted. The survivors of such bombing, it might be argued, as a result of losses and destruction due to enemy action or to looting and panic are torn out of the context which normally governs and restrains their actions. Having been wrenched from their ties to neighborhood, job, property, and even possibly family, they will no longer be subject to the network of influences which internalize social control of behavior. Simultaneously, the external controls (the police force and administrative mechanism generally) will also be gravely damaged by the bombing. In these circumstances we can perhaps conceive of sheer social chaos resulting: a Hobbesian war of each individually against all.

A more sober look at the possibilities, however, should serve to dispel this lurid image. While there is reason to anticipate increases in certain

types of anti-social behavior on the part of refugees and evacuees,[1] all the evidence of historical disasters indicates that man's urge to be part of an organized society is so overwhelming that it cannot be seriously shaken. Even the Black Death which, because of the fear of contagion, was particularly destructive of social cohesion, did not splinter society to its component atomic individuals.[2]

If we know anything, we know that men will follow leaders. The more interesting threat to social life as we know it, therefore, is not atomistic chaos but rather extreme lawlessness — in the form, perhaps, of a society consisting largely of robber bands engaged in mutual struggle for surviving economic resources. It is conceivable that the emergent leaders thrown up by the disaster, who may have no connection with the official authorities, might in many cases desire to maintain their position for the purpose of engaging in predatory activities. However, since in the nature of the case these leaders will have neither ideology nor organization to win them support outside their own group, it is difficult to see how they could stand out against authorities who will have the advantage of legitimacy and of at least a partially effective nationwide organization.

Perhaps the most interesting example in recent history of anything approaching extreme lawlessness in this sense occurred during some of the more confused periods of the Russian Civil War when (among others) Bolsheviks,

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1. While this might seem to be a fairly obvious development among uprooted populations fleeing into areas which have suffered relatively less or not at all, there is no evidence of any serious criminal problem in the evacuations associated with actual or threatened World War II bombings. Janis mentions increases in looting, thefts, and juvenile delinquency in the bombed areas after a raid (op. cit., pp. 147-9), but crime in reception areas is not even mentioned in any of the standard reports. By way of contrast, a high rate of criminal activity was encountered among displaced persons and other refugees in occupied Germany shortly after the war ended.

2. Encyclopedia of the Social Sciences, II, pp. 574-576.

Whites, independent peasant movements, minority separatist movements, and foreign interventionists struggled against one another in a shifting pattern of alliances. This instance is sufficient to demonstrate that such a scramble is possible in a disaster context. Even under the worst interpretation, however, the experience was one of civil war (that is, of competing authorities), rather than sheer lawlessness. The possibility of revolutionary as opposed to anarchic conflict is discussed in the next section. We still must conclude that there is no evidence that a disaster context has ever produced in modern times anything approximating a collapse of organized society, except possibly as a transitory local phenomenon.

Turning from the limited evidence in the historical record of past disasters to our present problem, it may be helpful to project ourselves imaginatively into the situation created by the hypothetical bombing disaster. On our assumptions, our 100 largest cities (i.e. cities down to the size of Montgomery, Alabama -- population 107,000) have been struck by bombs large enough to kill the bulk of their inhabitants if no protective measures were undertaken. In taking stock of the population after the initial attack,[1] it is necessary to consider the joint effects of the long-appreciated initial hazards and the newly-revealed radiation threat. The recent AEC release on fallout[2] reports that the area of serious-to-lethal radioactivity for the Bikini detonation of March 1, 1954 covered about 7,000 square miles. The seriousness of the hazard may be appreciated when we note that 100 bombs could cover with such radioactivity almost one-fourth of the nation's

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1. It is believed that the mutual attrition of strategic forces will preclude the mounting of additional attacks of anywhere like the magnitude of the original blow.

2. AEC release of Feb. 16, 1955. Full text available in U.S. News and World Report, Feb. 25, 1955, pp. 118-134.

aggregate land area of 3,000,000 square miles.[1] The heavily urbanized Northeast, in particular, may possibly be almost blanketed. On the other hand, the AEC report emphasizes the possible value of protective measures -- in particular, taking shelter in basements or solid structures -- and implies that the decay of the radiation is so rapid that the period of serious danger may be over within 48 hours. This last view has been challenged by Ralph Lapp,[2] and it does seem likely that even after this length of time the degree of survival will depend upon the success with which evacuation from "hot" areas, together with decontamination and shielding measures against residual radioactivity, can be carried out.

With all this in mind, the survivors of the initial attack may, after a period like 48 hours, be divided into several categories.

(1) In regions sufficiently remote from attack (if any), the entire population structure will survive.

(2) In areas affected only by fallout, only a minor fraction of the population are likely to be casualties if it is assumed that all have behaved properly -- i.e., moved quickly to the best available fallout cover. Presumably this will apply to residents of rural areas and small towns, provided that they are not so unlucky to have a bomb go off nearby.

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1. The Bikini explosion has been widely reported to have the force of about 15 million tons of TNT (compared with 20,000 tons for the nominal atomic bomb). If so, this might be a rather large average bomb size for a 100-city attack. There will, however, be additional fallout hazard from bombs aimed at non-city targets (e.g., air bases). In addition, the cumulative fallout of many bombs may lead to serious-to-lethal radioactivity in large areas not so heavily affected by any single weapon.

2. See his "Radioactive Fallout III," Bulletin of the Atomic Scientists, XI (June 1955), p. 207.

(3) Cities provide generally excellent protection against fallout, but unfortunately they will presumably be the target areas and so will be vulnerable to the still more terrible immediate effects. In the absence of an effective shelter program, our assumptions provide for little survival of urban populations if they remain in the attacked cities. On the other hand, should the city-dwellers follow FCDA policy and evacuate, they will with high probability be exposed in the process of movement to the fallout hazard in places where good cover is hard to come by (depending upon wind patterns, the fallout from any single bomb on a city will tend to extend along a relatively narrow sector, but the cumulative effect of many bombs in heavily populated areas may leave only a few safe areas).

Summing up, it appears that even after consideration of fallout effects, the major weight of attack will be borne by the urban population (for our purposes "urban" refers to the population of the 140 largest cities), comprising about [illegible] of the nation's total. While there will be some losses among the non-urban [illegible] by and large it seems safe to conclude that casualties and material damage for them will be light enough so that they will still have a way of life to preserve after the bombing.

The threat to this way of life will come from the disorganized urban survivors who may have lost all their relatives and who will be in desperate need of food and shelter. The survivors of this vulnerable group, however, may be a class relatively small in numbers. The urban survivors will essentially have the choice of placing themselves in a position of dependence upon the population and authorities of the small towns and

rural areas in order to obtain food, shelter, and other necessities of life -- or some or all of them may attempt to take what they need or want by force. Only the latter alternative is really consistent with the picture of chaos described above, but there are many reasons to believe that it will be by far the less prevalent development. For one thing, the survivors will include sick and injured who will have to accept dependence; still others may be in a shocked or a passive mental state, incapable of aggressive action; the law-abiding lifetime habits of the majority may not be easily broken; and finally, few will have the opportunity to secure firearms.

The receiving communities, on the other hand, will be strongly motivated to provide relief to those in need,[1] but also to preserve their way of life against the threat of force. There will be local and state police forces, and frequently military forces in the general area who can be called on to preserve order. It is true that the national and even most of the state administrative mechanisms may be paralyzed by the destruction of Washington and state capitals, and the disruption of essential links of the communication networks located in the target cities. Nevertheless, local authorities can generally be expected to act on their own initiative with the forces at their disposal -- especially as the interests of these surviving authorities will be closely tied with those of the local populations which placed them in office. To the extent that administrative centers or even whole states and regions are not bombed or that alternative lead-

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1. A recent study of disaster situations has concluded that generosity and self-sacrifice in the period immediately after the crisis is an almost universal pattern of reaction. See F. C. Ikle and T. C. Kincaid, "Social Aspects of Wartime Evacuation in the United States" (September 1954), Committee on Disaster Studies, National Academy of Sciences.

quarters provided with functioning communication channels are operating,[1] considerable administrative and police resources will be available to the authorities in any area where they may be hard-pressed. The disproportion of force and of organization would seem on the whole to be sufficient to coerce even the aggressive elements among the refugees to accept a dependent status, though there would perhaps be temporary lawlessness in some local areas.

Looking at the matter from the point of view of the receiving communities, it would seem that providing the food and shelter required by the refugees would probably prevent a host of troubles, and so would constitute the wiser as well as the more generous course of action. The food resources in the country-side and small towns are probably adequate, though the distribution would be spotty at first.[2] Housing space is much tighter, but refugees will generally accept makeshift quarters for a period of time.

II. The Basic Organization of Society

If we may grant that society will not collapse in the emergency period into a state of anarchy, the next question to which we may turn is whether the basic principles of our existing social organization may be expected to

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1. Recent news reports have indicated that the national government has begun to undertake appropriate precautions to this end. See The New York Times, November 21, 1954, p. 1 story headed "President in Bomb Shelter Leads Drill for Atom Raid." The story describes the manning of alternative command posts outside Washington, with functioning communication channels, under a plan designed to cope with the bombing emergency

2. Our huge farm price-support stockpiles may come in handy here!

survive in the longer run, or whether the delayed or cumulative consequences of bombing may overwhelm the way of life we know. These principles are generally summarized by the slogan-words "democracy" and "private enterprise" in the political and economic spheres respectively; it is assumed that the reader will have a general awareness of the actual (rather than ideal) phenomena and relationships covered by these words, and so we shall not go into their meaning here. One comment which should be made is that we assume that the possibly changed social structure after bombing will still be determined primarily by ourselves -- we do not consider the case where the social structure may be reorganized by a victorious enemy or by other foreign nations after an unsuccessful war. The possible world contexts in which the reorganization may take place include continued war with a greater or lesser continuing threat of bombing, or a cessation of war by a defeated enemy, by mutual agreement, or possibly as a result of mutual inability to continue.

How might the bombing catastrophe affect these basic principles? In this section we shall discuss possible political effects, and in the next the economic. From the political point of view, there are several potentially dangerous factors, to which we now turn.

(1) Resentment against government: The evidence concerning bombing in World War II shows a universal tendency to blame the home government for bomb damage almost more than the enemy, apparently because the bombing stimulates aggressive feelings which cannot be entirely channeled to a far-away target. These feelings are exacerbated whenever real inadequacies of defense exist.[1] In view of the gross disproportion between the threat we are postulating and any defensive measures likely to be undertaken, an argument might be made

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1. This phenomenon is described in Janis, op. cit., pp. 124-152.

that a total repudiation of the pre-existing, and therefore demonstrably incompetent, government is in prospect.[1] While the military leaders provide the most probable substitute for the rejected government, more "constitutional" possibilities (e.g., the opposition party) may exist. In any case this is a conjecture, and, as we have said before, there is no substantial indication of this type of resentment being carried to the stage of radical social action. In addition, there are the counter-balancing phenomena of apathy[2] and of heightened dependence upon government (e.g., for food rations), both of which tend to lead to docility rather than revolt. Even where actual deprivation (of food, utilities, transportation, etc.) occurred in World War II, little or no overt opposition seems to have resulted.[3]

(2) Incapacity of legitimate government: Because of the enormous concentration of government on the federal level in Washington, the executive, legislative, and judicial arms may all be at least temporarily incapacitated. While the succession to the Presidency seems formally quite adequate,[4] it may

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1. The Strategic Bombing Survey reported a positive association between degree of bombing and opposition to the regime in Germany, as evidenced by subversive incidents as well as various measures of morale. The effect, however, was neither large nor clear, being partially confounded with other phenomena such as the growth of general war-weariness and the tendency of the heavily bombed large cities to contain more oppositional elements even without any bombing. See USSBS, "The Effects of Strategic Bombing on German Morale," Vol. 1, especially pp. 22-32, 94-103. Rather similar results are reported for Japan in "The Effects of Strategic Bombing on Japanese Morale."

2. USSBS, "German Morale," Vol. 1, p. 1.

3. Ibid., p. 28.

4. The succession presently provided by law is as follows: Vice President, Speaker of the House, President pro tem of the Senate, following whom are the Cabinet officers in order of rank: State, Treasury, Defense, Attorney-General, Postmaster-General, Interior, Agriculture, Commerce, Labor, and Health, Education and Welfare. There remains a certain probability, perhaps small but not negligible, that all of these officers may be killed. While Congress may elect a new Speaker of the House or President pro tem of the Senate, this may be a slow process if the session is out -- and if Congress is in session there are likely to be quorum difficulties. Legislation is now being prepared to strengthen the continuity of government under bombing conditions.

for some time be unclear who the chief officers of government legitimately are. In addition, the threat of anarchy may conceivably lead to the institution of martial law on state, regional, or national levels. In any case civilian government powers will be gravely weakened at the same time that possibly unpopular measures may have to be taken in the process of restoring order. The exigencies of the situation, plus the absence of any authority universally regarded as legitimate, might conceivably lead to dangerous conflicts between contending authorities.

In comparison with this, the threat from definitely subversive or anarchic sources seems minor. It is not as if the effect of bombing is to impair the efficiency of the apparatus of government while leaving oppositional groups intact. On the contrary, oppositionists also are bombed out, have their communications interrupted, and become preoccupied with the sheer mechanics of personal survival. Having nothing like the variety and depth of material resources available to the legitimate authorities, they would be unlikely to pose a really serious national threat even if they did have the potentiality for winning a considerable measure of popular support.[1]

(3) Sectional conflict: It is conceivable that local, state, or regional loyalties might, under stress, over-ride the national ones. Areas not seriously hurt by bombing might, for example, decline to assist those which were hurt. Or else, regions might differ so violently on such issues as continuation of the war, the basic structure of society, or redistribution of the surviving wealth as to bring about a dissolution of our national union.[2]

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1. See USSBS, "German Morale," Vol. 1, p. 103.

2. The separatist movements which flourished for a time during the Russian Civil War were motivated in large part by political and social opposition to the Bolsheviks in control of Russia proper.

While this possibility must be mentioned, it seems unlikely that national loyalties can be overturned in this way. Throughout history, wars have generally been associated with at least a temporary increase in national loyalties; this development would seem all the more probable if war begins by an enemy attack on the nation's homeland.

(4) Alterations of status: Perhaps the most explosive phenomenon of all consequent upon the bombing will be the alterations of status, which will be both radical and fortuitous. The stage is set for potentially violent conflict between the dispossessed class who may have lost home, property, job, and possibly family, and the retaining class who will be trying to preserve its own standard of life.[1] Conflict seems the more likely in that the former will constitute a mass of refugees quartered in the undestroyed regions and even homes normally inhabited by the latter, and so awareness of the unjust disparities of fortune will be high. It may be expected that the newly dispossessed class would demand adequate and speedy compensation for injury to person and property, in real as well as monetary terms. While this demand is not fundamentally out of harmony with our existing socio-economic order (our economic "constitution"), we shall see that the indications are that it cannot be reasonably satisfied under post-bombing conditions. Failing compensation, demands will very probably be generated for radical equalitarian redistributions, and these may be fundamentally disruptive of the social order. In this connection it should be pointed out that the more powerful position will be held by the comparatively undamaged social groupings

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1. If there is very great destruction of life relative to destruction of material resources, this conflict may be somewhat mitigated. It is even conceivable that all the survivors might be made "richer" in terms of property than before. Despite this possibility, it seems more likely that a substantial dispossessed class will exist.

resident in the areas which have escaped bombing; it will be the officials in these areas who will be providing food, shelter, and clothing to a dependent class of refugees. These relatively more powerful groups will be strongly impelled toward conservatism and the preservation of law and order.

(5) Martial law: This weapon for the defense of society is evidently a most dangerous one. The urgent requirements of the emergency period might set the stage for dictatorial rule, in the guise of martial law, which would sweep away the democratic heritage we value. Nevertheless, it is sometimes justified to suspend constitutional safeguards temporarily, and the threat to life and property posed by lawlessness and anarchy after such a bombing disaster, while probably manageable by resolute and timely control measures, far exceeds in magnitude some of the emergencies which have led to martial law in the past [1]

The wisdom of the adoption of martial law over the nation as a whole or over the attacked regions is a subject of controversy at the moment. Before June 1955, plans of the mobilization and civil defense authorities did not seem to contemplate either martial law or the use of military forces after bombing. But in Operation Alert, held on the above date, the President -- apparently without thorough briefing on the arguments pro and con -- declared a hypothetical nation-wide state of martial law. As a

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1. For a useful discussion of martial law, see Charles Fairman, "The Law of Martial Rule and the National Emergency," Harvard Law Review, LV (June, 1942), 1253-1302. The discussion of Lincoln's use of martial law in the Civil War (pp. 1278-1289) is particularly interesting.

. "United States Civil Defense" which represents a civil defense plan issued by the National Security Resources Board in 1950 before formation of the Federal Civil Defense Administration does discuss martial law as a last-resort measure (p. 18). Since its formation, however, the FCDA appears to have ignored and, by implication, frowned on planning for the use of military force to support the laws or to prevent anarchy in the emergency period. "This is Civil Defense" (1951) outlines the responsibilities of the armed forces bearing on atomic attack (pp. 11-12) without reference to this problem. "Police Services" (1951) nowhere mentions the use of military force or the problems posed by the probable inability of the courts to dispense justice

result, the official view of the administration is now that martial law will be adopted, though detailed plans for its execution have not been worked out.[1] On the other hand, a recent report prepared by the National Planning Association and signed by several prominent legal figures (including Dean D. F. Cavers of Harvard and Prof. C. Fairman of Washington University) comes out unequivocally against martial law.[2] Professor Fairman's views have been given wide circulation in columns by Arthur Krock in The New York Times.[3]

Despite this weight of opinion against martial law, it does appear that there is a valid role for martial rule in such a disaster. While we have minimized the probability of sheer anarchy consequent upon the bombing, this was on the presumption that the force remaining at the disposal of society would be used resolutely to put down or to cow lawless elements. Where the structure or the personnel of civilian police forces have been so damaged as to be unable to preserve law and order, there would seem to be no alternative to martial law. The declaration of martial law on a nation-wide basis by the President serves notice on all concerned that the resources available to society will be used to put down disorder, and the announcement itself may suffice to deter the development of such situations -- doubtless this is why martial law is sometimes proclaimed even in ordinary peacetime disasters. The opponents of martial law are on stronger ground when they point out how ill-suited this form of government is to the longer-range problems of recuperation from the disaster and prosecution of the war

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1. On these points see The New York Times for June 17, 1955 (p. 1, col. 4) and June 18, 1955 (p. 1, col. 3).

2. "A Program for the Nonmilitary Defense of the United States," A Statement on National Policy by the Special Policy Committee on Nonmilitary Defense Planning of the National Planning Association. Press release of May 9, 1955, pp. 23-25.

3. See The New York Times, June 23, 1955 (p. 26, col. 5).

effort. Even here, however, it should not be forgotten that the administration of war-ravaged areas under emergency conditions, in which the military have considerable experience, does provide some points of similarity with the post-bombing situation. All in all, it seems that the more reasonable view would hold that it would be wiser to accept the possibility that the post-bombing emergency might require martial rule. It would be far better to prepare in advance for this possibility by specifying the conditions which might warrant martial law, by training military officers so that they would know what lies within their allowable field of discretion and what does not, and by determining in advance the conditions under which martial law is to be dissolved. Surely it would be better to do this than to risk the possibility that martial law would be required anyway, but would be executed by officers without a proper knowledge of their powers and of the problems with which they must deal.

The possible unconstitutional and revolutionary consequences of these tensions are, on the political level, a non-legitimate, possibly military regime or contending sectional regimes, and on the economic level a radical change in the forms or distribution of property ownership. On the political level (the economic will be discussed in detail in the next section), it seems likely that the legitimate authorities will prevail, the argument being much the same as that used before in minimizing the possibility of a collapse of government authority. That is to say, the legitimate government will have material and moral resources which outclass those available to any possible competitor. It seems safe to say, for example, that American military officers will in general be strongly motivated to support the constitutional government rather than institute a military regime. Formation of a "national" government in the British sense is a likely development which could broaden political support for the legitimate authorities.

Perhaps the leading qualification which must be made of this conclusion is the possibility of exceptionally poor or weak legitimate leadership, which might voluntarily surrender power to some more self-confident group. Another more remote possibility is that the existing government might be somehow discredited by the bombing itself, which might occur if the ruling group had gained or retained power on the promise of making the nation (or the claim of having already made it) invulnerable to attack (e.g., Goering in Germany), or else on the promise or claim of being in some sense a "peace party". Almost certainly, a military regime is the dominating alternative in all these cases.

III. Status, Incentives, and Wealth

The distribution of economic as well as of political power, and attitudes in regard to that distribution, will be severely affected by the bombing. We may speculate that disaster would have two opposite effects with respect to such attitudes: on the one hand, inertial resistance to change is greatly weakened, opening the way for radical modifications previously beyond the bounds of possibility; on the other hand, the urgency of day-to-day requirements for human survival tends to impose pragmatic solutions for fundamental questions like the distribution of power, making it difficult for consistent schemes of social reform to gain acceptance. However strong the rationalistic arguments in favor of such schemes may be, neither the public nor the decision-makers have time to listen to much rational argument, nor will they be very willing to accept temporary losses in the hope of a larger long-run gain. As an example, the imposition of socialism in a disaster context is conceivable as a practical device to enable decision-makers in effective political control to strengthen their hold on the society, or merely to ensure that appropriate decisions are made in the economic sphere. It is not too plausible, however, to expect the disaster experience to bring about a socialist system by somehow convincing people or rulers of the rightness of that system.

The basic questions about the economic order concern the distribution of economic power among (non-government) individuals, and between government on the

one hand and individuals on the other. Economic power is wielded by individuals in their own name and for their own benefit, though of course social benefits generally accrue from such decisions (the "hidden hand"); economic power is wielded by government in the name of and presumably for the benefit of society as a whole, though it does not necessarily follow that social ends will be better achieved by this apparently more direct mechanism.

Turning first to the role of government in the economy, it is of course a common development in wartime for the government to expand its sphere of intervention and control. The major reason for this has been the desire or need on the part of the governing authorities (in democratic countries, with popular consent) to divert the resources of the community away from employments designed to satisfy private demands for current consumption or for investment for future production, and toward war or war-connected ends. This alone makes the government a far bigger customer for the products of the economy than before, and so enhances the economic influence of those holding political power. A second reason for the expansion of government controls has been the desire to achieve this diversion of resources in ways which are not consistent with the normal working of the private enterprise system. For example, a possibly efficient way of diverting resources is to offer high profits in war industries, but such high profits may be thought to have adverse effects on morale; the diversion of resources without the use of the profit incentive, on the other hand, will generally require direct government intervention.

In the post-bombing situation, we may expect that initially economic relationships will be in a chaotic state. Aside from the direct physical losses and their indirect ramifications through the economic network of suppliers and customers, the ownership of both the surviving and the destroyed properties will be confused because of the destruction of records; the financial mechanism may be wrecked; and the legal status of existing contracts of all kinds will be in doubt. Furthermore,

it may for some time be unclear what the social priorities should be as among the production of consumer goods, investment goods for re-building, and war goods. Almost certainly, some radical government interventions are required to settle on a rough basis (subject to post-emergency redetermination) the major legal questions of contracts and ownership, to provide for emergency credit, and to determine the main directions of effort for the surviving productive capacity.

This is the context, therefore, in which we may discuss the prospects for radical changes in our economic system. Among the basic principles of that system are private property, free choice of occupation, and freedom of contract, with consequent direction of economic effort under the profit incentive and through the price mechanism. None of these is absolute, of course, but we cannot devote further time here to an exploration of the qualifications and interpretations necessary for an adequate discussion of the fundamental economic principles of our society.

In the post-bombing situation, there are several main possibilities as to the type of government in effective power: the previously existing Federal government, an administration operating under martial law and perhaps military in nature, or possibly local or regional regimes out of effective control of a central authority. Under none of these circumstances does it seem reasonable to believe that the political authority will attempt a radical social reform to displace private ownership of enterprise. The first need will clearly be to get production and exchange going again, and this can best be done by the owners or managers previously in control.[1] In fact, the weakened administrative structure

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1. The experience of the Bolsheviks after their seizure of power in Russia is interesting in this connection. According to Dobb, their immediate aim was not socialisation but the conquest of key positions to consolidate the political power they had already won. Rather, Lenin's first priority was to keep industry running, largely under private ownership, but with Bolshevik central direction. The transition to "war communism" was due primarily to political and military developments. See M. Dobb, Soviet Economic Development Since 1917 (London: 1948), pp. 82-124. Similarly, the Chinese Communists have moved rather slowly in extending total state control over economic activity.

after bombing would indicate the desirability of maximum reliance upon permissive controls (i.e., inducements) as opposed to restrictive ones (prohibitions). Radical interference with the accepted system of inducements (the profit motive) may, therefore, have more adverse consequences than in a war without bombing. Of course, the administrative problem of reconciling economic inducements with social objectives remains--and might, in fact, prove impossible of solution.

We should not, however, limit ourselves to the surface question of demands or attitudes. Conceivably, even in the absence of direct demands for radical social change, steps might be taken in response to other demands which would lead inevitably to a modification of the socio-economic system. For example, the extension of government controls over the employment (rather than the ownership) of property is a normal wartime development (limited here by the weakness of damaged administrative mechanisms after bombing) which might, if long continued, tend to create vested interests opposed to a return to "free enterprise" or in favor of socialization. It would appear, however, that the most dangerous aspect of the situation from this point of view is not the mere extension of government controls, which is normal in wartime, but rather the steps which might be taken to resolve the conflicts of interest certain to arise over the critical question of the distribution of wealth--or, more generally, of status--after the bombing disaster. The major conflicting groups here will not be economic classes in the usual Marxist sense (proletariat vs. bourgeoisie), but rather the great classes of those who have suffered heavily from bombing, and those who have not.

In our society, status is determined in large part by wealth and income, and the desire to achieve or retain status in both of these forms is the dominant incentive of economic life. These foundations of status are affected in different ways by bombing. Income may be considered to have its sources in ownership of property (i.e., wealth) and labor (i.e., the exploitation of one's natural and cultivated human capacities). While the pattern of employment of labor will be

greatly changed by the bombing, it is perhaps reasonable to expect that the human capacities involved (for example, the ability to organize and administer men and machines, or scientific ability and knowledge, or native shrewdness and energy) will still command much the same returns, relatively speaking, as before the bombing. The major qualification here is the loss of capacity on the part of those who have suffered permanent injuries. Income from property, on the other hand, will obviously be affected in the same way as wealth itself.

The pre-bombing distribution of wealth will be grossly distorted by bombing. We shall discuss here the consequences of a number of possible resolutions of the conflicting claims arising from this situation: (1) Proportionate compensation for the war damage (i.e., shifting the incidence of the loss from those suffering immediately to the nation's property-owners in the aggregate); (2) acceptance and stabilization of the post-bombing distribution of wealth; (3) an entirely "new deal" of wealth, presumably on more or less equalitarian lines; and (4) abolition of private wealth (i.e. socialization) in greater or lesser degree.[1]

Proportionate compensation is in its aims the most conservative of the solutions above, since it attempts to preserve the wealth and status relationships of the pre-bombing situation. Unfortunately, the magnitude of the de facto change will have been so great that methods for achieving this aim will have to be rather radical -- and even then, only highly imperfect compensation could be achieved. In the first place we have the direct, almost unimaginable destruction. Even with the most perfect information -- that is to say, with the survival of perfect evidence as to title to the destroyed and undestroyed wealth -- a provision of compensation in the amounts of the order of tens or even hundreds of billions of dollars[2] would be fantastically difficult at any time, and would,

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1. The first three of these relate to the distribution of economic power within the accepted process of economic decision-making, while the fourth implies a radical change in the process itself. Actually, of course, the existing "free enterprise" process is already "socialized" to a substantial degree by government regulation and intervention in economic decisions governing the use of and returns from property, and in wartime there is normally some further accentuation of this development.

2. Our hundred largest metropolitan areas probably contain over 50% of the total national wealth, worth about $500 billions at current price levels.

for a sufficiently large-scale attack, probably have to be postponed until after the duration of the emergency.[1] Pending such compensation, the de facto distribution of wealth would obviously be completely altered and the final settlement, if and when it comes about, may be extremely unsatisfactory to those suffering the losses.

All this has assumed perfect information. When we consider that titles to wealth are in almost every case evidenced by ink scratches on paper we begin to have good cause for concern as to the ability of many property-owners to prove title to their claims. The relevant bits of paper include deeds, stock certificates, and bonds in the personal possession of property-owners; bank accounts, as evidenced by pass books and duplicated on the records of banks: currency, notes due, and accounts receivable; and various balances, such as brokerage accounts, in their favor. While there usually will be some duplicate record as evidence of holdings (though this is not the case for currency, for example), this duplicate may be even more vulnerable than the property-holders' own records. Thus, banks are more concentrated in cities than residents, and records of stock ownership are extremely concentrated in New York City.[2] Furthermore, in some cases the duplicate records will be in the control of adverse parties, as in the case of accounts receivable. We must add the further consideration that even if the true owners could be determined, they would in a very large fraction of cases have died -- in many case intestate, and in other cases having left wills which cannot now be found. In all of these cases the attempt to straighten out the tangled claims would completely overburden the courts and the accounting and legal professions, which are in fact so extremely concentrated in cities as to be among the most severely damaged sectors themselves.[3]

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1. The discussion which follows emphasizes the difficulties of equitable compensation even after the emergency. For the duration of the emergency period, the only compensation it seems feasible to pay will be largely in the form of relief.

2. To some extent, financial institutions and corporations have begun to store copies of essential records in locations presumably safe from bombing destruction.

3. On these points see D. F. Cavers, "Legal Measures to Mitigate the Economic Impact of Atomic Attack," Bulletin of the Atomic Scientists, September 1953.

Nor is it the case, as might first be thought, that this shattering of existing patterns of property relationships can be confined to areas in close proximity to the actual bomb drops. Many firms in undamaged areas will be bankrupted by the inability of firms in damaged areas to pay their accounts receivable. Checks on banks in damaged areas will be uncollectible. Insurance companies will have a large part of their assets destroyed, and of course they will be snowed under by death claims; in a great number of cases, probably the great majority, the equity of policyholders or stockholders would be completely wiped out in the absence of government intervention. In fact, a wave of bankruptcies similar to, but far more serious than, that characteristic of business crises would sweep over the entire economy in the absence of special measures to arrest this development. While this crisis effect could be stopped by appropriate government interventions (these might include moratoria on debts[1] and the granting of emergency government loans), a large fraction of the undamaged firms and individuals will still be legally bankrupt, and most of the remainder would also have their net wealth position affected in varying degrees. The reason for this is that, legally speaking, destruction extinguishes assets but not liabilities. While many debts will be wiped out or at least will not lead to insolvency if creditors do not appear and press their claims, the legal asymmetry in the treatment of assets and liabilities is certain or balance to affect adversely property rights in the undamaged areas.[2]

The effect of these considerations is not that no-one will be able to prove title to his lost property, but rather that the distribution of surviving evidence

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1. A debt moratorium, combined with the probable inflation which is to be anticipated in the period following the bombing, might eventually have the effect of extinguishing the real value of prewar debts.

2. Imagine, for example, a totally destroyed area. Firms or individuals outside the destroyed area who have title to the destroyed property will suffer a complete loss of their assets (assuming no immediate compensation). If debts are owed to persons or firms in the destroyed area, however, and even if the creditor individuals or firms are completely wiped out, there will still in general be legal heirs outside the bombed areas who can make claims good against the debtor firms.

will be largely fortuitous. Some firms in undestroyed areas will be relatively insulated from the effects of the destruction while others will suffer greatly from the interruption of economic relationships of various types. We may therefore conclude from this discussion that the de facto pattern of wealth distribution as among both individuals and firms would be everywhere severely disturbed by the bombings; that any serious attempt to restore the prewar pattern would be almost hopeless to undertake during the duration of emergency; and even after the end of the emergency such restoration could be only partial and might never be attempted at all.

The difficulties facing a policy of compensation or "equitable" distribution of the loss have been emphasized because such a policy is naturally the first one thought of. If it could be substantially carried out, it would have the advantage of minimizing the status effect of the bombing, thereby supporting or restoring a sense of security in property ownership. If, however, compensation is largely infeasible for the duration of the emergency, we must look into the alternatives available. Those alternatives still based on private ownership of property may be thought of as falling into two categories: (1) the de facto distribution of wealth emerging from the bombing may be accepted as a new starting-point for the socio-economic process, or (2) it may be swept away and replaced by a "new deal", perhaps intended only for the duration. From the point of view of power relations, it might appear that post-bombing conditions strongly favor the former of these, since the social classes losing property might also be expected to lose power, and therefore their ability to enforce some kind of new deal. Those who have lost property will be largely evacuees and survivors from the urban areas and will probably be highly dependent upon the surviving forces of government, which will naturally be in the rural areas and small towns and therefore elected by and responsive to the interests

of the local populations.

Since the ability to put property to beneficial use depends on law and order, however, and since this requires a fairly high degree of social consent to the status quo or else an effectively repressive police system, it would probably be expedient for the more fortunate classes to permit some compromise here. Humanitarian and equitable considerations would operate in the same direction; historical experience is rather mixed, however, in indicating the possible effectiveness of these motives under disaster conditions.[1]

From the point of view of feasibility, the policy of accepting the redistribution of wealth created by bombing raises the least problems. If one's property is in real form and undestroyed, he still has it; if it is destroyed, he is out of luck. Similarly, evidences of debt or other titles, and contracts as well, may or may not retain value.[2] Some property whose ownership is quite unclear (commodities held in warehouses or speculators' accounts, shares of stock where records of ownership have been destroyed and no claimant comes forward, etc.) may be held in trust, or taken over either by the government or by parties in actual possession. The need to conserve the strained policing and administrative resources of society constitutes an extremely powerful argument in favor of this policy.

The "new deal" policy involves rather considerable difficulties, both on the collection and the paying ends. In peacetime the collection might be fore

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1. That is to say, instances of cooperation, self-sacrifice, and heroism in the history of disaster have been matched by instances of exploitation and selfishness. In general, it appears that the former tend to predominate in the immediate post-crisis era, gradually giving way to the latter. F. C. Ikle and H. V. Kincaid conclude that this is a universal pattern in disasters, both natural and man-made.

2. It is possible, however, that debts may be placed under moratorium even where the debtors are still in a position to pay, in order to control the financial crisis arising out of bombing.

by a capital levy, with the government accepting payments in cash or in kind and making the distribution either in a lump sum or in periodic payments of cash. Such a policy would involve legal, accounting, and administrative problems perhaps comparable to those under a compensation scheme. It would seem, therefore, that rather more radical measures might be required for such a redistribution during an emergency of the type we are describing. The most obvious method, of course, would be to declare as the initial step all surviving property as held in trust by the state. This is not quite the same as the imposition of communism, since the idea is to redistribute this property as rapidly as possible among individuals and, even before this may be carried out, to permit private acquisitions of property out of the unconsumed portion of individual's incomes. Nevertheless, such a policy would concentrate so much economic power in government hands as to justify very real concern over its totalitarian implications. In the case of publicly held corporations, it is conceivable that stock interests could be rapidly distributed among the surviving individuals, but it is difficult to see how other property could reasonably be distributed. There are theoretical possibilities, but they all seem impracticable in such an emergency.

A "new deal" in status relationships might more easily be brought about, not by such an actual confiscation of property titles, but rather by controls limiting the power to spend one's nominal income. A thorough-going rationing scheme would tend to have this effect. Such a compromise outcome for the disaster situation might well command a wide degree of support; since property-owners would still retain some power of decision over the use of their holdings as well as a promise of augmented consumption opportunities at some future date, this solution might not be too unpalatable for them. We cannot comment

here on the system of controls necessary to put this compromise into effect.[1] It should be mentioned, however, that the equalizing of consumption opportunities would be expected to have some adverse effect on incentives.

A policy of compensation, we may conclude, while attractive from the point of view of equitably redistributing the loss, involves probably insuperable difficulties for the duration of the emergency, and even afterward could only be very partially effected. On the other hand, accepting the post-bombing status quo with respect to the distribution of wealth is unattractive from the equitable point of view, but of course the most feasible policy administratively -- failure to attempt a remedy of such gross inequities would be socially highly dangerous, but so are all the other possible policies. Finally, a radical, presumably equalitarian, redistribution of wealth seems extremely difficult to institute in any way not involving the almost total socialization of property. An equalitarian solution in terms of income or consumption possibilities and understood to be temporary seems more feasible than permanent redistribution of ownership.

As indicated above, World War II bombing was not associated with radical changes in social attitudes. Experience of the various nations subject to war damage in World War II seems to indicate a very widespread acceptance of the compensation principle.[2] In Britain, France, Japan, and Germany compensation was promised and paid for the major categories of damage. The British plan was basically one of compulsory insurance, but for personal chattels a certain amount of insurance was provided free, while any surplus over the minimum could be covered

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1. See, for example, the expenditure rationing proposal made by E. Shaw, T. Scitovsky, and I. Tarshis in Mobilizing Resources for War (McGraw-Hill, New York, 1951). Such proposals require, however, an effectively functioning financial system, as well as sufficient enforcement power to ensure proper segregation of consumption and non-consumption incomes.

2. Most of the following details are from Chamber of Commerce of the United States, "War Damage Indemnity," September 1960. The working of the Japanese program is described in great detail in USSBS Civil Defense Division, "Final Report Covering Air Raid Protection and Allied Subjects in Japan," pp. 177-191

by voluntary insurance. In the United States a scheme of voluntary insurance against war damage was offered by the government, but compensation for damage in t the Philippines which occurred prior to the passage of this legislation was granted gratuitously by the U. S. government. While details varied among countries, in each case compensation tended to fall considerably short of 100% (frequently because of use of prewar prices in calculating property values); in addition there was an equalitarian tendency in that losses up to a certain figure typically received more favorable treatment than higher brackets of damage.[1,2]

In World War II, then, it appeared that a compromise as among compensation, accepting the post-bombing distribution, and equalitarianism was struck -- the latter entering in the form of differential compensation rather than outright redistribution. This last is perhaps rather interesting, suggesting as it does the absence of pressure for a completely new deal of wealth. In the case of postwar Britain, however, it appears that there was in fact intense and widespread demand for a new deal along equalitarian lines, though it tended to operate through the tax system and such devices as dividend limitation rather than through the war damage compensation program.

The author's conjecture, and it is only that, is that after a disaster of the magnitude postulated here, but assuming survival of a functioning and constitutional government, the compromise struck would be along the following lines: (1) Acceptance for the duration of the post-bombing structure of wealth, subject t compensation only in the form of a minimum of maintenance for survivors to

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1. In the Philippines, for example, losses were compensated "in full" (but only in terms of prewar values, replacement costs being approximately triple original costs) up to $[illegible], and in the proportion of [illegible]% over this amount. See the Final and Ninth Semi-Annual Report, U.S. Philippine War Damage Commission, March 31, 1951.

2. Apparently the working of the Japanese scheme was considered generally fair and adequate by the public despite the inflation which reduced the real value of the payments. USSBS Civil Defense Division, "Final Report", p. 180.

carry the displaced individuals over until they can be reintegrated into the productive mechanism. (2) A promise of "equitable" postwar reapportionment, primarily compensatory but subject to equalitarian modifications. (3) "Normal" wartime controls over the use of property and over consumption, limited by the weakness of the administrative mechanism. (4) Social priorities weighted very heavily in the direction of maximum restoration of production, with questions of social reform and distributive justice deferred to the post-emergency period.

Our discussion has not, unfortunately, been able to take adequate account of the long-run consequences, for a social pattern already weakened by bombing, of possible government policies like debt moratoria, capital levies, or measures taken to repress the inflation likely to follow the bombing. It is possible that mistaken or unsuccessful policies here may have extreme effects on the social structure. As for the consequences of the bombing itself, however, so long as the damage remains somewhere short of or in the neighborhood of the level we have been considering here, the present analysis seems to indicate that the force of custom and the necessity to get things done in ways which people will find familiar and comprehensible combine to reduce the probability of radical social change.

This conclusion, which is presented with considerable diffidence, may well represent merely a failure of imagination -- it is conceivable that the victory of Nazism in Germany or of Bolshevism in Russia would have been similarly discounted by the type of analysis conducted here.[1] Furthermore, the element of chance may also be importantly involved. A social scientist predicting in 1914

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1. This should not be taken as admitting that the situations are in fact comparable. For one thing, both Hitler and Lenin were leading movements with sufficient resources and mass support to pose a threat to the governments in power for years before they actually seized control. In addition, each movement was in part the product of an ideological preparation which had gone on for decades. In these circumstances, analysis would very likely have given considerable weight to the possibility of victory for the radical group, given a sufficiently desperate social situation.

that Lenin would not ultimately succeed might have been "right" in a probabilistic sense; events which are truly improbable will still occur from time to time, and Lenin's victory may have been one of them. Unfortunately for predictive social science, there seems good reason to believe that the element of chance is very large in human affairs, by which we mean that even relatively minor fluctuations in particular events (e.g., the course of a few bullets in Munich in 1[illegible]) may lead to radically different outcomes of historical processes. Let us hope, however, that our present conclusion may never be subjected to historical test.