

## BOOK REVIEW\*

*On Thermonuclear War*. By Herman Kahn. Princeton: Princeton University Press, 1961. Pp. xx, 668, \$10.00; with supporting reviews of *The Question of National Defense*. By Oskar Morgenstern. New York: Random House, 1959. Pp. xii, 306, \$3.95; and *Strategy in the Missile Age*. By Bernard Brodie. Princeton: Princeton University Press, 1959. Pp. vii, 423, \$6.50.

Books are frequently of importance in almost reverse proportion to the number of people who read them. A book's influence may be wide even though its audience is small. This is not to say that all widely-read books are insignificant, nor that all little-read books are important; but the point remains that a book may operate on the principle of a lever, exerting a pressure which in turn affects things afar off.

To illustrate, perhaps the three most significant books of the last hundred or so years are Darwin's *Origin of the Species*, Marx' *Das Kapital*, and Sigmund Freud's *Interpretation of Dreams*. The lives of every person in the European and American worlds are deeply affected by each; and yet each, even at the height of its influence, was read largely by specialists and almost never by the general run even of well-read people.

These are what might be called the lever books, the books which exert a leverage or an influence somewhere in the world, and thus start a series of movements which eventually ripple on to affect the lives of men generally.

The three books of which I write today have this quality of being lever books. At the moment, I suppose that the Kahn book is the most influential and significant work published in the year 1961 in the American press. Of our population of 180,000,000 people, it will be read only by a few thousand; but those few thousand include the makers of policy in the atomic age, and their judgments will affect the lives of all the rest of us. All three books are calculated to be read by the military planners; the Brodie book is very pointedly directed to the Army and Navy War Colleges, and the Morgenstern is aimed as much at the thinkers in the Department of Defense as to the intellectuals the country over.

These volumes deal pointedly, directly, and exclusively with human lives. These are not volumes directed to amusement or entertainment. Rather, they are devoted to the question of whether mankind will be here tomorrow, and in what numbers, and in what circumstances. Their theme is the preservation of a future existence for humanity.

Of the three, the Kahn is clearly the most ambitious, the most significant, and the most controversial. Its author is a physicist who has been associated with the

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RAND Corporation since 1948, serving as a student of and consultant on national defense. He believes "that unless we have more serious and sober thought on various facets of the strategic problem than seems to be typical of most discussions today . . . we are not going to reach the year 2,000—and maybe not even the year 1965—without a cataclysm of some sort" and that this cataclysm will prove a lot more cataclysmic than it needs to be.

Morgenstern and Brodie are equally qualified and equally depressed at the prospect before us. Professor Morgenstern, a Professor of Economics at Princeton, is an adviser both to the Congressional Committee on Atomic Energy and to the Atomic Energy Commission. He believes that today the United States face "the possibility of sudden and total disaster." A profoundly informed and thoughtful man, he is perhaps the gloomiest of the three writers, believing that vast areas of the earth, including the entire United States, may be exposed to "absolutely total destruction and . . . made uninhabitable for centuries to come."

Brodie, formerly a Professor of International Relations at Yale, has more recently been with the RAND Corporation. He has been intimately connected with the three War Colleges for the Air Force, the Army, and the Navy, and is the author of the highly regarded *Guide to Naval Strategy*. He believes that in speaking of modern thermonuclear war, "we are talking about a catastrophe for . . . [almost] . . . the entire population of a nation."

The heart of the Kahn book is an analysis of what is to be learned from military history reaching into the past to World War I. He projects possible wars which might occur in the future, looking to a hypothetical World War VIII, which he suggests might occur in 1973. In his descriptions of those wars which have not yet occurred, he gives us the trend and development of missile systems and of the potential for destruction in the next fifteen years.

I have said that the Kahn is the most controversial of these books, and it is. It is the most controversial because Kahn believes that with reasonable safeguards, there is some substantial possibility that a very large fraction of the American population and of American life may survive a missile war, and the other two authors are less optimistic.

Why should this optimism be controversial? Because most serious thinkers on the subject of national defense are so absolutely horrified at man's present potential for his own destruction that they are unable to think beyond what is called the strategy of deterrence. This is the theory of national defense which rests on the premise that if each side can totally destroy the other, then perhaps neither will make the effort.

Kahn lists as alternative national defense theories four basic possibilities, named, it may be added, with an uncommendable penchant for gibberish which is apparently popular in this branch of the national life. This is the belief that "no nation whose decision makers are sane would attack another nation which was armed with a sufficiently large number of thermonuclear bombs." This view

is supported by widespread acceptance of what may be called the "world suicide approach." For example, the 52 Nobel Prize winners in 1955 signed a statement of their belief that the continued use of force in international affairs meant that all nations would cease to exist. A fictional illustration of this point of view is Shute's *On The Beach*. This first approach requires essentially two things: The stockpiling of nuclear weapons, and a development of a means of their delivery. The second approach adds an element of a kind of "insurance" to this first position. This insurance concentrates on methods to defend against a possible enemy first strike by various types of counterforce. This includes the counterforce necessary not only to strike back, but also the force needed to survive as, for example, a good civilian defense system. Connected with this insurance approach is the capacity to engage in limited war, or war which is not nuclear in its nature. This second approach concentrates on the development of thermonuclear weapons, plus the insurance elements of improved defenses and improved delivery systems, and plus the capacity for limited war. This approach best summarizes today's basic American position on the national defense.

As a third possibility, there is what is called technically by Kahn the "credible first strike capability." By this he means an accumulation of thermonuclear weapons, plus a sufficiently effective delivery system to make it possible to strike first at the Soviet Union in an effort to destroy it altogether. The first two proposals deal fundamentally with national defense by being, in the traditional sense, defensive; they are fundamentally based on a philosophy of deterrence—on a hope that they will never have to be used because they are sufficient to make the enemy's attack profitless to him. The third deals with national defense as a matter of offense. This is particularly the kind of striking power which might seem appropriate if the Soviet Union attacked not us, but our allies in Europe, sending their missiles, for example, to London.

As Kahn colorfully develops, under the deterrent theory of pushbutton war, the entire system has been demonstrated a failure if the buttons ever have to be pushed at all. The preparation of such a defense requires a substantial national effort, and may be as much as we can bear. The third approach, that of capacity to strike the enemy first with such devastation that he cannot strike back—in other words to attempt to knock out his own deterrent defense against us—may involve a greater effort than we are capable of maintaining, a matter to be shortly considered.

Fourth, there is a more extreme variant of the third position. This is the so-called "splendid first strike capacity," a device which concentrates our entire national defense effort into the capacity to hit first, and which gives up the capacity to wage limited war altogether. This is a choice which could be made as a matter of economy—in planning national defense, one must always hold in mind that there are limits in terms of money and energy to what we can commit. This last view, the exclusive concentration on a first strike capacity, is essentially what was contemplated during the John Foster Dulles period in the State Department,

by what was then called "massive retaliation." Kahn thinks this approach little better than foolishness, and so do each of the other authors. The United States has subsequently abandoned that policy, and I believe has done so for the best.

To make decisions about national defense policy, one must understand realistically the consequences of various courses of action.

Kahn deals with all of the scientific realism of which anyone is capable with the practical consequences of various types of war. To understand those consequences, Kahn takes up the brutal question, "Will the survivors envy the dead?" Assuming a maximum attack on both sides, the questions for primary consideration are first, what proportion of the population will survive and how will it manage to do so—where will it live and what will it eat? Second, what will be the effect of radiation on the survivors, themselves? And third, what will be the genetic consequences of the radiation on future generations, assuming that enough people are left to have future generations?

Let us take up the problems in reverse order. Assuming maximum radiation, but assuming that three billion persons are still alive, Kahn estimates that in the first generation to be born after the period of destruction, approximately one million persons who would not otherwise be thus afflicted will be born with major defects; that ten million will have minor defects; that two and one-half million will die earlier than would otherwise have been the case; and that five million will be less fertile than they otherwise would. But the consequences go echoing throughout time for up to ten thousand years, and Kahn estimates that approximately three hundred fifty million subsequent persons will be adversely affected in one of these ways in consequence of that much radiation being loosed on the world.

This phase of the matter—the blighting of the future—seems from the moral standpoint to most persons in our own time to be the worst single aspect of war by radiation. It is bad enough to kill ourselves, but at least the act and the responsibility merge—we do it to ourselves. When we affect the future, condemning a child who has not as yet even been conceived to be born with a mental or physical deformity, we have completely separated the deed and the consequence of the deed. Nonetheless, Kahn notes that the increase thus caused in the number of deformed children born in the world is not a very large increase—it amounts to about ten per cent more than would otherwise be born deformed. Hence, he suggests that we may perhaps be willing to accept what he describes as the high risk of this additional deformity rate if it means not giving up Europe to the Russians; and similarly, the Russians may make a similar decision concerning the risks and costs involved in yielding some ground to us.

The second element is the element of survival. By nuclear attack, how many people can we expect to be killed in consequence of the attack itself?

The sharpest point in Kahn's book is that if we defend ourselves reasonably well, we will not all be killed. He believes that the talk of "total destruction" or "total annihilation" or of a world which "ceases to exist" is overdrawn and

beyond fact. He has no doubt that a Russian attack would kill a great many millions of us. Whether the number killed by the actual attack is in the relatively low millions—say twenty million of us—or whether it reaches half of our total population depends upon 3 factors: first, the accuracy of the enemy's delivery system; second, our own warning system, which affects both our capacity to use our civilian defense resources and our capacity to interfere with the enemy's attack by interrupting it through various defensive devices of our own; and third, the quality of the civil defense resource. Each of these remains so chancy and involves so many unknowns that none of the authors makes any very serious predictions on this score with one important exception—it is universally agreed that a good civilian defense system can result in an immense saving of lives.

Kahn believes that the country will survive an attack. He divides America for purposes of analysis into what he calls the "A" country and the "B" country, the "A" country being the metropolitan centers, the "B" country being the rural areas. He believes that the costs and problems of delivery will be such that the enemy will be compelled to direct his primary thrust against the "A" country, and that a considerable population will survive in the "B" country which may once again begin man's struggle up from chaos.

Kahn approaches the problems of reconstruction with a cold bloodedness of judgment which has offended many. He recognizes that the fallout will have rendered the earth, itself, to some extent unfit to produce food, and he discusses the types of food which we may be able to produce which will least communicate the poisonous effects. Moreover he recommends that there be some form of regulation so that those foods the prolonged exposure to which is most likely to cause cancer should be directed toward the older portion of the population, which will in ordinary course not be consuming them long enough to feel the effect of the accumulation, and that they can be kept away from children. But all of this seems to me to assume an effective regulatory system which could not be expected to survive the holocaust.

Let me turn from this morbid study to recommendations and conclusions:

First, as to civilian defense. The primary teaching of these works is that a civilian defense program is sound. If one believes that after an atomic war the world will really and truly cease to exist, then there is no sense in civilian defense. In this view, there is no need to devote money, energy, supplies, to this phase of our preservation. (I put aside the problem of the morbid psychology necessarily created by an excessive preoccupation with civilian defense—if a child was not going to live to grow up anyway, there is not much point in blighting its childhood with the preoccupation of scuttling to a hole in the ground.)

But our authors assure us that there is not merely a reasonable but a high likelihood that an effective and sound civilian defense program may eliminate sixty to ninety per cent of the casualties. Morgenstern is not optimistic about the utility of shelters as a protection against blast, particularly in the light of the difficulty of their construction; but he believes that shelters against fallout can be im-

mensely useful. Kahn's estimate is that an early attack against 50 urban areas which have no civilian defense measures will result in some ninety million casualties; that where there is minimum fallout protection, this destruction will be cut to between one and two-thirds of that amount, and that if there is in addition a strategic evacuation, the death toll might fall as low as five million. Moreover, he believes—as I have already suggested—that the world will not be totally unfit for human habitation thereafter. In a detailed plan he stresses that “inexpensive measures might save from twenty to fifty million lives.” He recommends a supplemental budget of at least five hundred million dollars a year for the development of this program.

This may well prove to be the most important part of the Kahn book and the Kahn approach. I suspect that this was in 1961 the most read and most considered book in Washington, and believe that the Kahn analysis and the Kahn recommendations have contributed substantially to the new serious attention which the government is giving to civilian defense problems. In his detailed plan, Kahn includes large scale community shelters and particularly the conversion of buildings which might be used for shelter and for other purposes, but he also believes that the government should put small family-type shelters in every town in the United States so that the population may see and examine them to the end of building their own.

At the same time Kahn believes that if we were to undertake a really mammoth civil defense program—say something of the twenty to thirty billion dollar variety—we might cause the Soviet Union to believe that we were preparing for a war of first strike rather than for a war of deterrence, or in other words, for a preventive war instead of a defensive one. Hence, he advocates a very substantial civil defense program, but not “the immediate institution of crash programs.”

Other Kahn proposals include steps for the reorganization of the government to improve its planning capacity. He advocates a war damage equalization appropriation to spread war loss over the entire population, and he discusses with some precision the problem of hardening of bases.

The hardening problem is a common topic in each of these three books. If we are to be prepared for a defensive war, and if we are to cling to our policy of deterrence, then it is absolutely imperative that we be able to strike back after we have been hit. As Kahn puts it, “at the minimum, an adequate deterrence for the United States must provide an objective basis for a Soviet calculation that would persuade them that, no matter how skillful or ingenious they were, an attack on the United States would lead to a very high risk, if not certainty, of large-scaled destruction to the Soviet civil society and military forces.”

Let us pause to consider this vital subject technically for a moment, because an incredibly large portion of our national budget is now being dedicated to establishing proof of the proposition I have just quoted. What we are saying is that we wish to deter the Soviet Union from attacking us by the knowledge on their part that they cannot afford to do so. It may be that they will wreak so much

destruction on us with their first strike that we shall be severely devastated; but our power of deterrence lies in the fact that we will be able to strike back and deal a return ruin which will give them pause.

We must assume that to prevent this strike back capacity on our part, the Soviet Union, if it attacks us, will direct its primary thrust at our sources of retaliation. Let me take examples from World War II to illustrate what will be done and what will not be done. At the beginning of the war, the prime thrust of the Japanese was to reach the fleet at Hawaii (and particularly the aircraft carriers), and to cut down the planes on the ground in the Philippines. In short, the enemy was striking at our capacity to retaliate. On the other hand, in the course of the war, much effort was directed to destroying the enemy's source of economic production—the oil fields, the factories, the dams.

A thermonuclear war puts a premium on the first type of attack and makes the second quite purposeless. There is no point in wasting expensive and difficult-to-deliver missiles on the Ford plant at Willow Run, or the Soviet oil fields, because the war will almost certainly not last long enough for these to make any difference. On the other hand, the enemy must strike at those installations which are capable of striking back at him.

If the enemy believes that he can successfully destroy our bases of attack, then the existence of our potential has no deterrent effect. This can be obviated by several devices. One is dispersal. We scatter our striking forces all over our continent and through the lands of our allies so that while the enemy may get at some of them, he will not reach them all. Second, is the device of hardening—the building of extensive underground or thoroughly protected installations which cannot be put out of commission by anything short of a direct hit. The so-called Minuteman Missiles with their "silos" buried deep underground, and with tons of concrete to remove from over them before they can be used are examples very much in point.

Hardening cannot as a practical matter be truly effective as against a direct hit; Brodie develops the fact that "a thermonuclear weapon detonating on the ground will cause a large crater around the point of impact . . . and we probably should write off any but the very deepest kind of shelter in the area covered by such a crater." He illustrates with one crater which was over a mile and a half in diameter, but as he notes, at short distances from the edge of the crater, the underground shelter may be very effective.

The hardening approach assumes basically a deterrent policy—if one were prepared to strike first, there would be no point in it except the protection against the possibility of the enemy beating us to the punch. But because we assume that we shall not attack first—or that in any case we wish to have a second strike capacity to hit again if the enemy retaliates against us—hardening is a current major program. Kahn and Brodie are insistent upon its wisdom, within the limits of economic capacity—as Kahn points out "if you spend everything on hardening, you have nothing left for attacking," and Morgenstern notes that it is very

expensive. In this respect, as in others, national defense becomes basically a matter of the budget.

Finally, there is the device of mobility. The authors are generally agreed that the railroad lines provide some advantage for this purpose—if missile projectors can be quickly moved about, the enemy's notion as to where they are may be inaccurate. But of all of the mobile defenses, the best and the most important in our time is the Polaris submarine. Morgenstern in particular is inclined to regard this as the first line of defense, as the invulnerable force. The atomic submarine can stay submerged indefinitely, and can project its missiles under sea, thus leaving the enemy with no practicable way of hitting it at all. As Morgenstern puts it, "holding our main retaliatory force at sea makes the greatest immediate contribution to the defense of the country; it protects the force proper and it frees the country thereby from direct and indirect effects of a possible attack on this force itself."

Morgenstern believes that a hardening may be very useful but that "the harder the bases, the heavier will be the attack." As recently as two years ago, he was in the vanguard as a principal advocate of the system of underwater defense, though he gives great credit to Senator Jackson of Washington as a protagonist of this approach. In the intervening two years immense progress has been made, and popular thought is catching up with Morgenstern. The number of the submarines has increased and their capacity to remain submerged indefinitely is well established. There remains an important element which is still highly secret, the accuracy of their missiles; the enemy will not be much intimidated if he does not believe the submarine will be able to put the missiles where it wants them. On this score, doubtless the Navy now knows what it can do, but I do not.

The authors are generally agreed that the policy of massive retaliation was a mistake. What is it that this glittering and vaguely impressive phrase means? It is a technical term used in the alternative to another technical term which is that of "limited war." Limited war is war fought by older methods and without nuclear weapons.\* It still remains the dominant form of actual warfare in the world—it must be remembered that only two atomic bombs have ever been dropped in anger and every military conflict from 1945 to the present has, in fact, been a war of the old style, or a so-called limited war.

The national reaction against the Korean War made popular for the moment the commitment to another kind of a war, the war of massive retaliation by which we mean the prompt and exclusive use of atomic weapons. Such a policy, as these authors generally agree, and as I, personally, feel very strongly, is altogether wrong. The country cannot render itself defenseless against smaller attacks. We must be able to cope with a Berlin situation or to deal with disorders in our own hemisphere with something short of the ultimate weapon. Else we may, for fear of starting a general nuclear war, shrink from using the nuclear weapon, and thus be altogether defenseless.

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\* There is also now some advocacy of limited nuclear war.

As Brodie shows, Mr. Dulles, himself, was abandoning the massive retaliation approach before he died. The current administration is committed to the proposition of having the means to deal with relatively small as well as the final war, and this appears altogether sound. If one believes, as I do, in the policy of stopping the Communists where they are, then we must anticipate the possibility of an endless series of what might be called brush fire wars. We may in the sixties have in Vietnam essentially the same problem which we had in Korea in the fifties, and we must be capable of dealing with those situations. For this purpose, as Brodie develops, the ground forces will inevitably remain the primary combat force, supported by the Air Force and the Navy, and therefore, our preoccupation with the new and dramatic world of missiles cannot permit us to fail to maintain an Army.

We can never move altogether away from considerations of cost—as Brodie says in a well-titled chapter, “Strategy Wears a Dollar Sign.” Our dollar costs have gone up from President Truman’s efforts to impose a ceiling of some fifteen billion dollars to a present figure of around forty-seven billion for national defense purposes, with the space budget in addition.

This is, I realize, not meaningful; the numbers are so large as to make no sense. But the principal point is that they do not make sense to economists either because the statement of the number of dollars answers the wrong question. The important question is what proportion of our gross national wealth can we afford to put in the defense without thereby unmercifully sacrificing the rest of our lives. Something has to be left for food, clothing and shelter. In this regard, most of us have divided personalities—we wish an adequate national defense, but we also wish to keep our taxes within reason.

This whole question of the requisite number of dollars I put aside without saying more than that our authors are thoroughly conscious of it. But I cannot leave the subject without expressing the conviction that if we are to survive in a world with the Russians, we must inevitably face an austerity which we have not yet known. We shall not, I fear, be able forever to dissipate our substance on luxury and extravagance. Whether we are of the fiber to make the necessary sacrifices remains to be seen—but at least our tradition in that regard is one of rising to the occasion.

Clearly the best solution to these grim problems of war is to avoid war if we can. This the world has never been able to do for any appreciable period of time; and yet the stakes have never been so high, and mankind has never had so much to gain for itself and its future by making the effort. Kahn in a controlled way is the most optimistic of all of the serious writers on the future war, and even he sees a destruction which may reach as high as two out of three of us, and which may pollute our offspring for ten thousand years. If in a vast riot of self-destruction we are going to give the world back to the Lord, He deserves to get it in better shape than we seem about to give it to Him.

We have inherited a world which has been here for a good many millions of

years, and which has sustained recognizable human life for something over twenty-five thousand years. We may now, in our lifetime, be about to render that world only partially inhabitable, and we may vastly reduce its population.

Perhaps it is inexorable fate that we are thus about to pollute our inheritance. If this is the price that must be paid for resistance to Russian encroachments, then we must pay it. Our ancestors were willing to risk their lives for principle, and I am confident that if Americans are again called upon to take that risk, they will do so, though it be for the last time.

In these circumstances, the great need of the time is firmness and sobriety. I believe altogether that Communism is the greatest menace in the world of free institutions, and that so far as the Russians are concerned, we must either accommodate, conquer, or die. I have very little faith in the possibility of accommodation.

But such risks must be taken not only bravely but responsibly. This is no time for a sort of dare-devil, stick-the-tongue-out bravado. For this purpose—for the purpose of meeting our responsibilities as citizens of a democracy sensibly—books such as these three are invaluable. The great danger of the atomic age may be the physical death and destruction; but a second great danger is that the complexity of modern physics poses problems which are beyond man's understanding. This may destroy democracy altogether by rendering man incapable of governing himself.

The basic premise of a democracy is that the citizen controls his future by his vote. But if this control of the future is to be meaningful, the vote must be an intelligent one. If the ballot box becomes only a goal in a kind of intellectual blind man's buff, then democracy has been killed because it has become impossible. If, as I suspect may be the case, over 99 per cent of our population is compelled by the sheer complexity of the matter to vote on issues relating to thermonuclear war without actually having even a slight understanding of the meaning of their votes, then on this issue our self-government becomes only a form.

Hence, these books make great contributions to the thinking of those who must directly make national defense policy. They also contribute vitally to the existence of democracy itself. With their aid, the thoughtful citizen can do much to educate himself on the future for himself, his family, for his country, and for the world.

This is, of course, a continuing job. Opinions must not only be formed today, but be subject to change tomorrow. The advisability or not of air testing of nuclear weapons is a case in point. So is the continually agitating problem of the Nth power—the next and the next to acquire bombs. If China should ever be in serious production, perhaps all these matters will need complete rethinking.

Morgenstern gives us important counsel when he comes to his recommendations. On the matter of negotiations for the enemy, he tells us that "a fundamental principle that can be extracted from experience of past wars is this: Always talk with the enemy." This he would do even in wartime—we must never

cut off negotiation and communication, must never "slam the door and be done with it."

This is surely sound counsel for today and tomorrow. We must use the instruments of international negotiation as long and as well as we can. So long as we are negotiating, there is always a chance that reason can prevail. It may be a slim chance, but it is some chance. Some individual matters may always be non-negotiable—our Secretary of State has recently said, for example, that we will not negotiate over the existence of the present Cuban government. This seems to me precisely sound. We are not going to tolerate a Communist government within 90 miles of our mainland, and one way or another, I trust we are going to get rid of it. The point is non-negotiable. But there are enough negotiable points left in the world to make it our plain, moral duty to keep on trying. It is better to meet our enemies in the halls of the United Nations than at Armageddon.

These are the three best and most literate of national defense commentators, at least outside the ranks of the strict professionals. To a man they give us the grave message that our lives hang by a thread. In such circumstances, when we peer for the moment into the future which may hold the destruction of every thing and every person we have held dear, we will do well to return not only to our weapons but also to our philosophy. We are committed by our most cherished traditions to a philosophy of humanity toward our fellowman. Our program of sharing what we have with the other peoples of the world is a program aimed at peace through humanity. Perhaps the world is sometime to be conquered by nuclear explosions. But if it is ever to be conquered in a fashion which will leave any of it, it will be conquered instead by a principle based on deeds. The principle is, "Thou shalt love thy neighbor as thyself." This may sound trite and unrealistic, but it should not. Not when, for life itself, we do not have a second choice.

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BOOK RECEIVED

*Design of Water Resource Systems.* By Maas, Hufschmidt, Dorfman, Thomas, Marglin & Fair. Cambridge: Harvard University Press, 1962. Pp. xviii, 620. \$12.50.