Book Reviews

On Military Decision-Making and Its Consequences

Race to Oblivion. A Participant's View of the Arms Race. HERBERT YORK. Simon and Schuster, New York, 1970. 256 pp. $6.95.

Herbert F. York, physicist, ex-Director of the Livermore Weapons Laboratory, ex-Director of Defense Research and Engineering of the Department of Defense, ex-member of the President's Science Advisory Committee, and ex-member of the General Advisory Committee to the Arms Control and Disarmament Agency, has given this book the subtitle "A Participant's View of the Arms Race." It might also have been called "How I Turned from Participant to Nonparticipant in the Arms Race and Why." York was active during both the pre- and the post-Sputnik eras in the evolution of military hardware, a span during which the potential U.S. and U.S.S.R. casualties in nuclear war changed from the tens of millions to well above 100 million. In retrospect, it was a period of increasing strategic weaponry on both sides and decreasing security for all.

York's treatment gives the reader a great deal of insight into the government decision-making machinery that controlled the evolution of U.S. strategic systems. York divides this evolution into three separate periods: (i) Before Sputnik, the United States engaged in the supposed "rational" process of responding to the Soviet tests of nuclear weapons and to the initial tests of long-range ballistic missiles. (ii) After Sputnik, we see a mad rush for new technology, mostly exotic in nature. Interestingly enough, none of these exotic weapons ideas has proved practical, although billions have been spent in exploring them. One of the characteristics of that period was an overexpansion of the aerospace industry, which remains a large problem today. (iii) The failure of the exotic technological ideas to produce practical military hardware led to the present period, in which military expansionists complain that "no new weapons systems have been started lately" while the Soviets appear to be in a state of rapid growth. This apparent growth, however, is principally the continuing attempt by the Russians to catch up with the over-rapid evolution of U.S. military systems which began before and continued beyond Sputnik.

Interestingly, the public's view of the priority on defense has undergone a dramatic change during these three periods: After the war much research and development was supported by military agencies, primarily as a matter of opportunity rather than principle. After Sputnik, the way to get programs through Congress was to give them a defense connotation—we have the Defense Education Act fellowships and the National System of Interstate and Defense Highways. Now, in reaction to Vietnam and to disillusionment about finding military solutions to many of the world's problems, there is a clamor for separatism between defense and nondefense activity—leading to an unhealthy isolation of DOD decision-making.

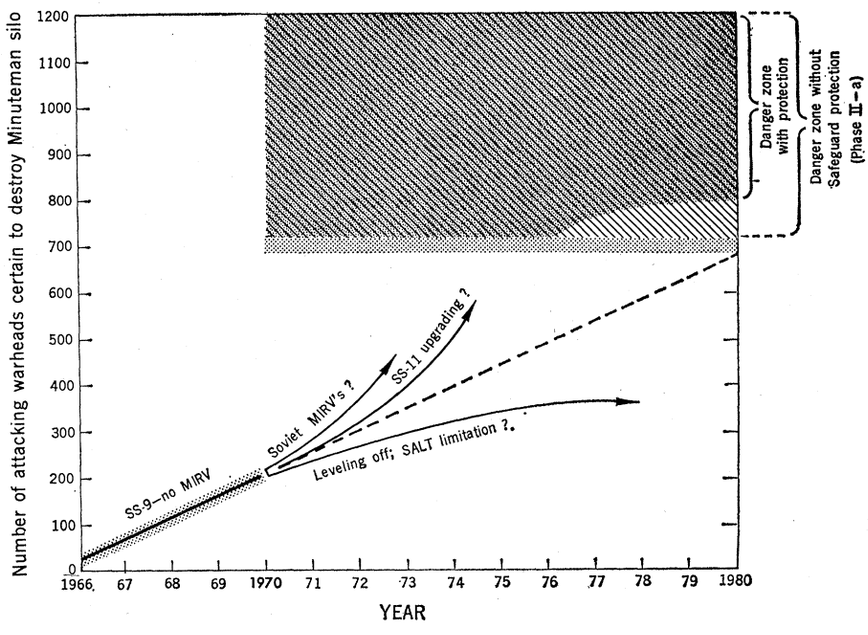
The most recent epoch has seen a return to more orthodox technology; its main characteristic is the pressure to introduce ABM and MIRV into U.S. strategic forces. This has become the subject of much debate today, and York's book in effect constitutes a preamble to a final warning that widespread introduction of ABM's and MIRV's will lead to what he calls the "ultimate absurdity in nuclear weaponry." What York means by the "ultimate absurdity" goes beyond the now generally accepted conclusion that the superpowers in expanding their nuclear weaponry at enormous cost have thereby decreased their security. What York points out is that if we are unable to avoid the further arms spiral inherent in the interplay between ABM and MIRV, then the premium on speed of decision whether or not to use nuclear weapons will increase even further. This implies that the question of control of military actions will no longer be simply a contest between civilian and military (or Executive and Congressional!) authority but might become a contest between control by men and control by machines. York points out that even if the required speed of response per se would not require the President to predelegate the authority to fire nuclear weapons to lower echelons of command, or even to a computer, the time for decision-making available to the President would be so short that he himself would have to be de facto "pre-programmed" to make a predictable decision in the face of apparent enemy action. The evidence relating to such action would be presented to him, but he himself could not have time for critical evaluation of the information. This is the "ultimate absurdity" of which York speaks.

York describes numerous episodes in the military decision-making process in which he personally participated and which illustrate the "rational" process by which these determinations are made. Among the most interesting episodes discussed is the turbulent debate concerning aircraft nuclear propulsion and the supersonic B-70. The battle to build a military aircraft propelled by nuclear power (ANP) went on for many years and publicly involved the contractors concerned, the Joint Committee on Atomic Energy, and the offices directly responsible for the program. The pressure to build expensive models for actual flight continued, although the basic technology for the engine, the shielding, and crash safety was clearly inadequate. Self-serving "intelligence reports" announced that the Soviets were flight-testing ANP, a claim which turned out to have no basis in fact. Quite apart from the technical problems which were never solved, a valid military or civilian use was never identified; ANP remained a "system in search of a mission" until the program was finally canceled.

Of particular interest is York's account of the internecine warfare between the Army and the Air Force in connection with the development of intermediate-range ballistic missiles: the Thor of the Air Force and the Jupiter of the Army. Thor was to be only a stopgap in the Air Force's develop-

ment program of long-range ballistic missiles. It was recognized that the U.S. has little to gain and much to lose by stationing intermediate-range ballistic missiles around the perimeter of the Soviet Union; the fact that we did this in Turkey may well be connected with the Soviets' attempt to place IRBM's in Cuba. In its attempt to maintain its toehold in the battle among the services for "space" the Army pushed the Jupiter program well beyond the date of any reasonable usefulness; in York's phrase, "The Jupiter was a backup to a stopgap." Although it was the Army's bootlegged ballistic missile program which provided the first U.S. satellite to follow the Soviets' launch of Sputnik, York belittles this success as an ex post facto justification for the program. York illustrates in vivid detail how many personal factors entered into the attempt to preserve the Jupiter program in the absence of any justifiable mission; the last gasp was an attempt to keep the production lines going in order to fire Jupiters from Johnson Island in the Pacific as targets for ABM interceptors fired from Kwajalein as part of the Army's ABM Research and Development Program. This justification was pushed although long-range target missiles could be fired more realistically into Kwajalein over the Pacific test range from Vandenberg Air Force Base in California. With the death of Jupiter the Army lost its only remaining role in "space" other than its hope of receiving authority to go forward with extensive ABM deployment.

The post-Sputnik era not only gave a boost to many military activities in the name of closing the "gap" that was said to have opened up in military prowess, space exploration, and technical education between the U.S. and the Russians, it also made a profound change in the military decision-making mechanism in the government. The Office of Director of Defense Research and Engineering was set up in the Pentagon to provide technical management over the competing programs of the services, all of whom attempted to divert maximum resources toward the suddenly prominent military role of space, often to the neglect of their more prosaic, but important, missions. The office of DDR&E has performed its function of increasing coordination and control among the various research and development activities of the services very well. However, as occurs frequently—and the office of



Possible Soviet moves in weapons development. The range of these threats that would be covered by the U.S. Safeguard ABM system is indicated by the shaded areas (upper right).

DDR&E is no exception—an organization set up primarily to review and control activities whose initiative stems from others becomes eventually a source of advocacy of new activities itself. The situation is perhaps best demonstrated by the role of DDR&E in the Safeguard ABM decision. Here, at least in all the public dialogue, it has been the central Defense Department management group in DDR&E which has been the principal advocate of the system. The attitudes of the individual services and their contractors as they relate to Safeguard are much more ambiguous.

In this brief review I cannot comment on the many detailed and highly interesting episodes York describes which in their totality have brought our strategic weapons systems to their present level. Each of these episodes involves people who for the most part had the best of intentions; yet York documents a large number of what in retrospect are clearly over-reactions and technological excesses. As York points out, the responsibility for these errors is widespread; it goes all the way from presidents through members of Congress to the reaction of ordinary citizens. The net result, however—and York documents this extensively—is that the U.S. has been responsible for the majority of the actions which have set the rate and scale of the arms race. There is little question but that the U.S. has led the world in the expansion of nuclear weaponry, and a great deal of the now highly publicized Soviet buildup can be ascribed to a Soviet effort to catch up rather than to a revival of Soviet aggressive intent—let alone to Soviet plans for a preemptive first strike against the U.S. strategic forces, as Secretary Laird suggested last year in Congress.

Let me close this review by commenting briefly on the new threat endangering the precarious stability between the U.S. and the Soviet Union: the current drive toward deployment of MIRV and ABM. York describes the historical origin of the U.S. MIRV decisions as a reaction to early intelligence on Soviet ABM. He notes the fact that the Soviets have lost enormously in their security as a consequence of their ABM activities. Our MIRV technology is clearly more advanced than that of the Soviets, even though the Soviets' ABM deployment has stopped at a level of 60 missile launchers around Moscow. We are now proceeding with MIRV deployment, the stated purpose of which is to assure penetration of our missiles through a very extensive ABM system. Similarly, the prime justification for the current U.S. ABM plans is the threat against the U.S. Minuteman surmised from the multiple-warhead tests of the Soviet large liquid-fuel rockets called SS-9's. Although it is now clear that the *present* generation of Soviet tests does not lead to a Soviet capability of attacking more than one U.S. Minute-

man silo with a single SS-9, the pressure to deploy Safeguard through this argument continues.

The debate that has resulted from the President's decision to deploy Safeguard has been widely publicized; the weakness of Safeguard is discussed so extensively in York's book that I do not wish to comment on it here in detail. I would like to summarize the situation through a graph which clearly documents much of what York is talking about in his book. At any given moment when a strategic decision is made only a very limited amount of information is available from which to project into the future. Yet the consequence of such decisions can only protect against a certain band of threats. The actual Soviet moves may go slower or faster than has been forecast by intelligence estimates; there is ample historical precedent for error in either direction. Therefore a good strategic decision should cover a relatively broad spectrum of anticipated Soviet moves; a bad decision would cover only a narrow range of threats at very large cost. The Safeguard ABM system is in this latter category.

The graph shows how the number of potentially lethal attackers against Minuteman might be growing in time. At present, there are 200-plus potential attackers in the Soviet inventory—very much below the amount which would constitute a real danger to Minuteman's remaining intact as a deterrent retaliatory force. If the present rate of growth should continue without any new technology there would be no problem until the end of this decade. If, on the other hand, MIRV's were to be adapted to Soviet SS-9's, or if existing Soviet missiles were to be greatly upgraded in accuracy, then such a threat could technically arise much earlier. However, the Soviets may equally well decide that they have now achieved approximate parity in land-based missiles and that they need not continue the rate of growth that has characterized the last few years. Of course, the present SALT talks may also inhibit further missile expansion.

If one looks at the situation honestly and is not trapped into accepting specific models of Soviet growth too literally, it is apparent that there is a large range of patterns by which the Soviet threat might expand. In the graph presented here I plot several alternative ways in which the threat might grow, and also show how very narrow is the band over which Safeguard can make any difference at all to the threat. This means that a decision like the Safeguard decision can in fact be escalatory because it raises doubts as to our intention, even though Safeguard either might not be needed at all or else could be defeated very easily. It would be something of a miracle if our opponents would happen to select a level of threat that exactly matched the level of defense we are providing against it.

A review of this kind cannot do justice to the thoroughly interesting detail, much of it of a personal nature, in which York conveys the flavor of the problems faced in military decision-making and describes the attitudes of the individuals concerned. His narrative leaves a convincing impression of the essential arbitrariness of the decision-making. As an example, the fact that the United States has 1000 Minutemen in the force today, rather than a somewhat smaller or larger number, is a consequence of the decimal system and of little else. No very profound deliberations were involved, yet it is the defense and survivability of these 1000 missiles which now occupy much of current strategic planning.

York comes to the conclusion—which is now hopefully shared by an ever-increasing number of concerned individuals both inside and outside the military establishment—that the only way to arrest the "race to oblivion" is through mutually agreed limitation and reduction of nuclear armament. The world hopes that SALT will be an effective step in this direction.

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British Prehistory

Lower Palaeolithic Archaeology in Britain. As Represented by the Thames Valley. JOHN WYMER. Humanities Press, New York, 1968. x, 430 pp. + plates. $22.50.

John Wymer has produced a valuable survey of Lower Paleolithic occurrences from the major part of the Thames drainage. The book combines a catalog-gazeteer of lithic implements and the sites that yielded them with an interpretative synthesis relating the sites and finds to Middle and Upper Pleistocene stages of evolution of major stream channels in the drainage system. Introductory chapters discuss lithic implement manufacturing technique and the typology used by the author, as well as geomorphology (especially the evolution of river systems affected by the close proximity of glacial ice) and present a descriptive and evolutionary scheme for the three major industrial complexes (Clactonian, Acheulean, "Levalloisian") Wymer recognizes. The catalog-cum-gazeteer divides the region into 11 sections, each of which is treated separately in detail. Summary chapters discuss the place of the Thames drainage finds in the total British sequence and relate that sequence to the general picture of Lower and Middle Paleolithic developments in Europe and Africa.

The catalog is by far the most valuable as well as the bulkiest part of the book. More than just a list of sites, it documents very nearly all the recognized Lower Paleolithic artifacts from the region (except those in some private collections) in a fashion which is exhaustive to the point of triviality: two "sites" listed on page 84, Broadwell and Yelford, are finds of bifaces in footpaths made of gravel of uncertain origin; numerous surface discoveries with only roughly approximate locations are documented. For most of the localities, apparently complete bibliographic references are given. The area treated is, of course, a key one for any understanding of British Lower Paleolithic prehistory, and includes such famous sites as King's Cross Road (Gray's Inn Lane), locale of the earliest recognized discovery of a Paleolithic implement from Britain, the Swanscombe pits, including the Galley Hill ones, Furze Platt and the Maidenhead complex, Stoke Newington, Little Thurrock (Grays Thurrock), Crayford, Baker's Hole, and dozens of others of crucial importance. Nutshell descriptions of the stratigraphy and artifacts from these sites are not elsewhere to be found in one reference.

Some aspects of the work need to be treated with reservations. At best, Wymer's flake tool typology is sketchy: the pieces in the categories "points" (Nos. 10, 11, 129, 131) and "endscrapers" (No. 48) are not consistently grouped, nor do the categories bear any resemblance to the types with these names recognized in good Western European practice. The so-called Levalloisian collections are most inadequately treated. Wymer's category "Levallois flakes" includes retouched flake